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ABSTRACT

A study investigated the severity of attention deficit hyperactivity disorder (ADHD) in Austrian elementary classrooms and evaluated how teachers help their students when they encounter ADHD related symptoms. Subjects were 37 Austrian elementary teachers and their 750 students. Participating teachers completed the survey by reporting their students' behaviors and listing ideas of how they help their students who show severe ADHD behaviors. Results indicated that (1) students who exhibited ADHD symptoms showed more difficulties in reading than their non-ADHD peers; (2) boys appeared to show more ADHD behavior than their female peers; (3) 7 behaviors were found among 20% or more of the students at the severity level; (4) talking to the students individually or in groups was among the main suggestions; and (5) teachers stressed the importance of viewing each student's learning style as unique by recommending individual instruction and assigning students to instructional activities they are really able to handle. Findings suggest that ADHD behavior occurs in alarming percentages among Austrian elementary students, and that participating teachers had a high agreement of how to help with attention deficit problems most effectively. (Contains 56 references, 15 tables, and 5 figures of data. Appendixes present diagnostic criteria, survey instruments, and additional data.) (Author/RS)

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ATTENTION DEFICIT HYPERACTIVITY DISORDER

AND READING

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An Action Research

Submitted to the Graduate College of Bowling Green

State University in partial fulfillment of

the requirements for the degree of

SPECIALIST OF EDUCATION IN READING

May 1996

Committee:

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ABSTRACT

Recent studies consistently point to three to five percent of the nation's children having a diagnosed attention deficit hyperactivity disorder (ADHD). Being aware that this disorder that may cause educational problems predominately in elementary grades, the aim of the present study was to investigate the severity of the syndrome in Austrian elementary classrooms and to evaluate how teachers help their students when they encounter ADHD related symptoms. Specifically, this study addressed the following questions:

1. Did students in these observed classrooms who exhibited ADHD symptoms show more difficulties in reading than their non-ADHD peers?
2. Was there a difference among the observed Austrian girls and boys in relation to the findings of ADHD? Were more boys or girls observed as having severe ADHD symptoms?
3. Which were the most observed symptoms (as being severe: indicated with a three or four in the curriculum map) in the classrooms?
4. What did the teachers report most frequently as aids to help students with specific ADHD related symptoms?

A survey was conducted involving 37 Austrian elementary teachers and their 750 students. Participating teachers completed the survey by reporting their students' behaviors and listing ideas of how they help their students that show severe ADHD behaviors. To answer the first three question the statistical procedures ANOVA, the post hoc test Tukey honestly significant difference method, and Pearson correlation were conducted. To respond to question four, the researcher completed a content analysis by counting the frequency of teacher suggested ideas. The specific findings of the study were: It appeared that students who exhibited ADHD symptoms showed more difficulties in reading than their non-ADHD peers. Boys appeared to show more ADHD behavior than their female peers. Seven behavior were found among 20% or more of the students at the severity level (indicated with a "three" or "four" in the curriculum map). Results revealed that talking to the students individually or in groups was among the main suggestions (100%) throughout the entire study. Moreover teachers stressed the importance of viewing each student's learning style as unique by recommending individual instruction (94%) and assigning students to instructional activities they are really able to handle (83%).

Given the results of this conducted survey ADHD behavior does occur in alarming percentages among Austrian elementary students and it becomes apparent that something needs to be done very soon in order to help them.

Moreover the results showed that participating teachers had a high agreement of how to help with attention deficit problems most effectively, it can be concluded that educator are already trying to aid their students.

HYPERACTIVE

by Tom Fairchild

I like to run and jump and play,
Tumble, roll, and swing.
Everything's important. . . so I attend
to everything.
I like to play with treasures in my desk,
I like to watch it rain.
I like to taste the snow,
to smell the leaves,
to hear the whistle of the train.
School is fun at lunch and recess,
but I do get kinda sad,
'Cause all the time I'm in the class
the teacher thinks me bad.
She says I never pay attention.
Calls me messy.
Calls me lazy.
Since she can't do nothin' with me.
I guess she thinks I'm crazy.

The teacher thinks I'm naughty
'cause I'm different from the rest.
What the teacher doesn't understand
– I'm being at my best.
She says I'm rude 'cause I interrupt,
calls me mean because I'm scrappy.
I guess I can't do nothin'
to make my teacher happy.
I try to listen, I try to sit.
I really, really try.
If she would only understand.
But she don't! I wonder why?
What she sees is really me,
I wish she could accept that
I'm not naughty, bad, or mean.
Even tho' I'm hyperactive
I'm still a human being.

Dies ist für die Kinder, die anders sind;

Die Kinder, die nicht immer "Einser" bekommen,

Die Kinder, die Ohren haben

Zweimal so groβ wie die der Altersgenossen.

Oder Nasen, die tagelang laufen.

Dies ist für die Kinder, die anders sind;

Die Kinder, die einfach aus dem Schritt sind,

Die Kinder, die alle hänseln,

Die Schnittwunden auf ihren Knien haben,

Und deren Schuhe ständig naβ sind.

Dies ist für die Kinder, die anders sind;

Die Kinder mit einem Hang zum Schabernack,

Denn wenn sie erwachsen sind,

Die Geschichte hat es gezeigt,

Sind es die Unterschiede, die sie einzigartig machen.

Digby Wolfe

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CHAPTER I. INTRODUCTION

Attention plays a central role in the learning process (Levine, 1990; Mosse Vol. 2, 1982). The ability to focus and maintain attention belongs to the highest mental activities (Mosse Vol. 2, 1982). It "[. . .] is the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought [. . .]" (Mosse Vol. 2, 1982, p.501). "The attentional system involves nearly all structures of the brain" (Naffe & Runge, 1994, p. 1). Levine (1992) conceptualized attention as having five underlying components: 1. planfulness; 2. selectivity; 3. inhibition; 4. continuity; and 5. monitoring. Each of these five components represent a mechanism for the control of learning and the mediation of behavioral and social performances.

During the last couple of years teachers have increasingly noticed a deficit in the attention of their students (Barkley, 1990; Levine, 1993a). Research studies consistently point to three to five percent of the nation's children having the diagnosed syndrome (Bain, 1991; DSM-IV, 1994; Ekwall, Shanker, 1989; Hümer & Hauser, 1992; Hynd et al., 1991; Naffe & Runge, 1994; Kannemann, 1994; NIMH, 1994; Levine, 1993b; Stoner, 1994; Taylor, 1990; Weaver, 1994b; Weaver, 1994c). However, teachers stress that numerous students who seem to have a lack of attention are not diagnosed. As a result of this, surveys employing teachers' and parents' rating find a 10 to 30%

prevalence of attention deficit in school-age population (Silver, 1992; Taylor, 1990).

The attention process cannot function unless its basis in the central nervous system is intact. Where it is not intact properly, the child's entire intellectual and emotional development is seriously impaired (Goldstein, 1990; Levine, 1993b). When such dysfunctions occur, children frequently concentrate on inappropriate stimuli and have too great a tendency to participate in activities that are purposeless. They are said to have an attention deficit Attention deficit "impairs ability to maintain alertness to avoid distractibility, and to select purposeful stimuli to focus on" (Taylor, 1990, p. 426). Moreover it is a key symptom in the Attention Deficit Hyperactivity Disorder (ADHD as stated in the Diagnostic and Statistical Manual of Mental Disorder - DSM-IV, p. 78).

ADHD "has become much more of a recognized disorder within the education field over the recent years" (Silver, 1990, p. 394). An attention deficit carries with it a wide range of manifestations and implications. Affected students experience problems with information processing as well as with productivity. It is not surprisingly, therefore, that attention has also an impact on the reading process (Taylor, 1990). As a result of this, attention deficits may be an important key to reading difficulties.

Statement of the Problem

As stated in the introduction, attention is a key to basic skills, such as reading. Learning to read is actually an awesome challenge and a lot of children have difficulties with it.

Reading is a complicated skill that must be learned, preferable early in life, and consistently practiced. The areas in the brain needed for reading are present in all children. They remain dormant, however, unless and until the child learns to read (Mosse Vol. 1, 1982). For instance, learning to read requires derived attention. Memory also plays an important role in the reading process. The existence of being able to memorize allows individuals to relate a sound to a letter and vice versa (Levine, 1993a; Silver, 1992). LaBerge-Samuels model of reading, "the most widely quoted of all the reading theories" (Samuels, 1994, p. 816) stresses the importance of attention in the reading process as being in use to "identify changes in the form of information as it moves form the surface of the page into the deeper semantic-linguistic centers of the brain" (p. 817).

Several problems may arise during the process of learning to read. The reading disorders of many children can be caused by psychological factors while their cerebral reading apparatus remains intact (Mosse Vol. 1, 1982).

The reasons underlying a child's reading disorder are often not a part of an unconscious process. A child may deliberately refuse to learn to read because he or she hates the teacher or wants to punish his or her parents.

Another reason might be that some children are convinced that they are stupid. They have been so discouraged and feel so helpless and incompetent that they make up their minds not to try. Some children think reading is too hard for them and that they will surely fail. Moreover these children believe that if they do not try, they can at least assure themselves and everyone else that if they had tried they could have learned to read.

Yet another reason may be that individuals have problems concentrating or focusing, symptoms that are persistent in children with ADHD. The researcher wanted to stress that dysfunctions of attention have been identified as the most common neurodevelopmental problems affecting children (Levine, 1992).

That is why this paper addressed the research on Attention Deficit Hyperactivity Disorder. It will primarily focus on the effects of attention deficit on reading in Austrian elementary classrooms.

Rationale

Based on experiences with students at the elementary level in Austria and students from the Bowling Green State University Reading Center, the writer of this paper has increasingly noticed children with an attention deficit. As a result of these experiences the writer of this paper wanted to investigate the relationship between attention deficit and reading difficulties.

Research Questions

The writer addressed the following questions through the research:

1. Did students in these observed classrooms who exhibited ADHD symptoms show more difficulties in reading than their non-ADHD peers?
2. Was there a difference among the observed Austrian girls and boys in relation to the findings of ADHD? Were more boys or girls observed as having severe ADHD symptoms?
3. Which were the most observed symptoms (as being severe: indicated with a three or four in the curriculum map) in the classrooms?
4. What did the teachers report most frequently as aids to help students with specific ADHD related symptoms?

Limitations

This paper was aimed toward gaining information about the relationship between attention deficits and reading. It explained the survey the investigator of this study conducted among 37 Austrian elementary classrooms.

One of the limitations of this study the researcher was aware of was, that convenient sampling was used. Austrian elementary teachers were asked to participate in this survey, and 37 teachers voluntarily agreed to be part of the study. Due to the fact that the researcher of this study was in the United States while conducting the survey among Austrian elementary students, only 37 classrooms could participate in this study. Moreover the amount of classrooms did not allow the researcher to generalize her findings. Additional surveys need to follow in order to get a clear picture of the situation of ADHD behavior in Austrian elementary classrooms.

CHAPTER II. LITERATURE REVIEW

The purpose of this investigation was to review current literature (books, articles, internet sources) on attention deficit hyperactivity disorder. Specifically, this chapter will review: (1) the different labels ADHD encountered within the last 60 years, (2) Levine's model of attention deficit, (3) ADHD and schooling, and (4) ADHD and reading with LaBerge-Samuels model of reading.

A Common Syndrome with Various Names

Children with attention deficits have been identified with numerous names, according to Bloomingdale (1984). This linguistic fact indicates that it is not easy at all to define the concept of this syndrome. In the United States the syndrome is referred as "Attention Deficit Hyperactivity Disorder" (ADHD) the diagnostic term recommended in the Diagnostic and Statistical Manual of Mental Disorder (DSM-IV, 1994). Whereas in Austria and other German-speaking countries this syndrome is referred as to "infantile psycho-organic-syndrome" (POS). To avoid any misunderstanding, the researcher used the name ADHD throughout the entire paper.

In 1863 Heinrich Hoffman, a German physician described children who were restless, or hyperactive, in his classic well known book "Der Struwwelpeter". The book is a collection of humorous moral tales for children (Taylor, 1990).

"'Phil, stop acting like a worm,
The table is no place to squirm."
thus speaks the father to his son,
severely says it, not in fun.
Mother frowns and looks around
although she doesn't make a sound.
But, Philipp will not take advise,
he'll have his way at any price.
He turns,
and churns,
he wiggles
and jiggles
Here and there on the chair;
"Phil, these twists I cannot bear."'
(Silver, 1992, p.3)

This "Zappelphillip" was drawn from his observations of children. Today, this boy might be identified as having ADHD (Silver, 1992, p. 3).

Defining or diagnosing ADHD has been and still is a challenge for teachers, psychologist, and behavioral scientists. The definition has changed various times.

Until 1940 children who had difficulty in learning were labeled as mentally retarded, or having a nervous system disorder (Silver, 1990). Later on, researchers believed that those children had no brain damage, but some nerve pathways that were not functioning correctly. The term minimal brain dysfunction (MBD) was introduced and studied during the following 20 years (Sliver, 1990; Silver, 1992; Naffe & Runge, 1994). Minimal brain dysfunction is referred to "children of near-average, average, or above-average general intelligence with learning or behavioral disabilities ranging from mild to severe, which are associated with deviations of function of the central nervous system" (Silver, 1990, p. 394). The concept of hyperactivity was first mentioned in the literature in the United States in 1937 (Silver, 1992).

The first official acceptance of what is now called ADHD as a clinical diagnostic category was in 1968, when it was mentioned in the Second Edition of the Diagnostic and Statistical Manual of Mental Disorder (DSM-II) as "hyperkinetic reaction of childhood". Among the characteristics of an ADHD child that were identified at this time were overactivity, restlessness, short attention span, and distractibility (Silver, 1990).

In DSM-III the term for this disorder was changed to attention deficit disorder (ADD) to emphasize that distractibility and short attention span were the primary clinical issues and that hyperactivity or impulsivity also might be present. Two subtypes, ADD with hyperactivity and ADD without hyperactivity, were defined (Barkley, 1990).

In DSM-III-R the revised addition of DSM-III the term was changed to attention-deficit hyperactivity disorder, to reflect that although distractibility is the primary focus, hyperactivity is also an important factor of the disorder (Goldstein, 1990). Attention deficit without hyperactivity became one of the three subtypes of ADHD.

In the latest edition of the Diagnostic Statistical Manual of Mental Disorder, DSM-IV the syndrome is mentioned under "Attention-Deficit and Disruptive Behavior Disorder" and identified as "Attention-Deficit/Hyperactivity Disorder". "The essential feature of Attention-Deficit/Hyperactivity Disorder is a persistent patterns of inattention and/or hyperactivity-impulsivity that is more frequent and severe than is typically observed in individuals at a comparable level of development" (DSM-IV, 1994, p. 78).

The diagnosis still requires that the onset of hyperactivity, inattention or impulsivity occurs before age seven, but now the child or adolescent has to exhibit six or more of the presented symptoms of inattention or hyperactivity-impulsivity for at least six months. See Appendix A for a list of these symptoms, such as "[. . .] often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities" (DSM-IV, 1994, p. 83). Moreover these symptoms have to be present in at least two or more settings. There also has to "[. . .] be clear evidence of clinically significant impairment in social, academic, or occupational functioning" (DSM-IV, 1994, p. 84).

The terms inattention, hyperactivity, and impulsivity are specified in the DSM-IV (p. 78-88) in the following way. Inattention may occur when the child fails to give "close attention" or makes "careless mistakes in schoolwork". As a result of this their homework is done "carelessly", disorganized as if their "mind is elsewhere". Children who are diagnosed as having this disorder may begin with a work and, before they are done, they have already moved to the next one and so forth. As a result of this, these individuals have problems following instructions and "fail to complete schoolwork". Moreover these students show difficulties organizing tasks. They may suddenly get lost during instructions since they are "easily distracted". Therefore it is very difficult for those children to perform well in school. There is so much going on around them, such as the noise from the streets, or even a student who reads to another one. Once they finally start a task they do not know what to do.

Hyperactivity, specified by Taylor (1990) as "excessive movement, excitability, fidgetiness, and restlessness" (p. 437), may be present when the school-age child runs excessively around and cannot sit or stand still. Hyperactivity as stated by the DSM-IV (1994) means, that six or more symptoms of hyperactivity (see Appendix A) have been observed in the individual for at least six months. There are a lot of ADHD children that are more likely to be fidgety; some part of their body is always in motion, often a purposeless one, as if "driven by a motor". Their fingers are tapping, or they are playing with their pencil. Bain (1991) described it in the following way: "They may fidget or squirm excessively, talk constantly, and have trouble playing quietly" (p. 25).

Impulsivity can be observed when children have "difficulty in delaying responses, blurting out answers" (DSM-IV, 1994, p. 79). Goldstein (1990) used the term "overarousal" to describe this phenomena, since these children tend to be excessively restless, overactive and easily aroused. They are not able to reflect before they speak or act. As a result of this, their actions are spontaneous, impulsive, and do not reflect past experiences and consequences (Goldstein, 1990; Silver, 1992). It also causes them trouble waiting for their term and failing to listen to directions. Moreover an impulsive individual may put himself in dangerous situations which may lead to accidents (Silver, 1992). Impulsivity as stated by the DSM-IV (1994) means, that six or more symptoms of impulsivity (see Appendix A) have been observed in the individual for at least six months.

Behavioral manifestations occur in multiple settings but for the diagnosis of ADHD (as stated in DSM-IV, 1994) the symptoms have to be present in at least two settings such as school and home. "It is very unusual for an individual to display the same level of dysfunction in all settings [. . .]. Symptoms typically worsen in situations that require sustained attention or mental effort or that lack intrinsic appeal or novelty"(DSM-IV, 1994, p. 79). Signs of the disorder may be very minimal when those individuals are interacting one-to-one with an adult when being diagnosed (Bain, 1991; Silver, 1992; Taylor, 1990). "The symptoms are more likely to occur in group situations (e.g., in playgroups, classrooms, . . .)" (DSM-IV, 1994, p. 79-80).

Since inattention and hyperactivity do not always occur in the same intensity one can distinguish between three different subtypes:

(1) Attention Deficit/Hyperactive Disorder, Combined Type: Most children who have ADHD fall under this category.

(2) Attention Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive Type: This subtype has the hyperactive symptoms dominant. The term is used if six symptoms of hyperactivity-impulsivity (but fewer than six symptoms of inattention) have been present in the child for at least six months.

(3) Attention Deficit/Hyperactivity Disorder, Predominantly Inattentive Type: This name is used if at least six symptoms of inattention (but fewer than six symptoms of hyperactivity-impulsivity) have been found. Students who have the latter subtype are socially withdrawn, shy, and unpopular with peers. Their difficulties tend to concentrate around mental confusion factors, such as difficulty concentrating and finishing a task, poor organization of schoolwork, daydreaming, and being slow moving (Mosse, Vol. 2, 1982). It seems that children identified with this subtype use their energy to direct it inward, in contrast to ADHD children with subtype two (as referred to in DSM-IV) who use their entire energy to "move" around (Taylor, 1990).

Surveys indicate that ADHD predominately inattentive occurs about one-fourth to one-half as often as ADHD predominately hyperactive-impulsive (Taylor, 1990).

Many researchers thought that the classification provided by the DSM-IV was not satisfactory, because more subtypes should be added, such as "with a reading disorder", "with an arrhythmic disorder" (Mosse Vol. 2, 1982, p. 505). Moreover Mosse stated that this association is a lot more frequent than between an attention disorder and hyperactivity. "Almost all the 445 children with a reading and writing disorder I studied had some kind of attention disorder, but only 29 of them also suffered from hyperactivity" (p.505).

"Associated features vary depending on age and development stage and may include low frustration tolerance, temper outbursts, . . ." (DSM-IV, 1994, p. 80). The DSM-IV description of ADHD ended with a list of differential diagnoses of the behavior specified as symptom of ADHD. Among these were "age appropriate behaviors in active children", or "understimulating environments", which may cause "unappropriate" behavior (p. 82-3).

Levine's Model of Attention Deficit

As stated in the introduction, Levine (1992) identified attention as having five components: 1. planfulness; 2. selectivity; 3. inhibition; 4. continuity; and 5. monitoring. A breakdown in any of these components can adversely affect achievement and development.

Planfulness

Planfulness enables the person to be reflective and think about actions before actually pursuing a task. This allows the person to activate the most appropriate behavior under any specific circumstances.

A person who lacks such manifestations is likely to show cognitive impulsivity. As a result of this, there is a lack of behavioral judgment which often can be the result of aggressive outbreaks. Because of the person's behavioral impulsivity and lack of searching for alternative behavior, he or she may emerge with poor coping skills, having little or no sense of how to manage stressful or frustrating situations.

Such children come home from school and want to do their homework but they find out that they have left the appropriate materials at school. These children may have difficulties in planning something since they proceed to quickly without thinking. After done with the first step, they often forget what to do next and get easily distracted.

Selectivity

"Being able to select one stimulus or a group of stimuli for attention and to pay no attention to all others is vital for survival" (Mosse Vol. 2, 1982, p. 518). It protects individuals from being overwhelmed and confused by a large variety of stimuli and makes it possible to respond immediately to stimuli that indicate an emergency.

Experimental psychologists such as Broadbent are trying to understand the organic basis of attention with the help of information theory (Mosse Vol. 2, 1982). Therefore Broadbent developed filter models of the attention process that attempted to show how the brain selects stimuli to attend to, filters, analyzes and stores them. This means that distractions have to be filtered out. Levine (1993c) defined distractions as "sounds, sights, or ideas that are unimportant or have nothing to do with the important thing going on at the moment" (p. 22). Distractions might have the form of unimportant things or sounds one can see, hear, or experience such as daydreams, thoughts about the future, things one wants or other people. If a child has an attention dysfunction it basically means, that there is lack in the components of attention.

The greater clearness produced by attention is dependent on its selectivity. Once a stimulus has been selected for attention, it becomes more clearly outlined and can be both more accurately perceived and more easily distinguished from its surroundings (Nevoman, 1995).

A child with attention deficit may have difficulty finding out what is important to study, so he or she focuses very often on the wrong or unimportant details.

Inhibition

Inhibition enables the person to focus by being resistant to any form of distraction. Sitting in a math class and paying attention on the subject is not that easy all the time. There are many distractions such as the beautiful earrings of the professor or the conversation of two nearby students. Levine (1987) categorized common modalities of distractibility into external or internal forms. Among those the most common are:

(1) Visual distractibility: Many children have a preference for irrelevant visual data and are therefore fascinating observers.

(2) Auditory distractibility: Auditory distractibility occurs when children have trouble with sustained listening for details.

(3) Social distractibility: Often children with attention deficits have difficulties concentrating in the classroom because of their peers. They also do not know how to behave properly, how to make friends--they do not have "a clear picture of what is going on when they enter a social context" (Levine, 1987, p. 261). Moreover they tend to be impulsive, are not able to wait for their turn and even interrupt their friends while talking. Also the timing of

relationships as well as the indirect approach may be hard for impulsive children (Bain, 1991).

(4) Insatiablility: The "perceptual hunger" (Levine, 1987, p. 25) for novel and intensive experience may lead to provocative behavior. For children who have a "perceptual hunger", it is hard to concentrate during a class period when knowing that they will go fishing in the afternoon. They are oriented toward the future (Mosse Vol. 2, 1982).

To concentrate on the subject matter the student has to be resistant to everything else. He or she has to focus on one thing. This is something a lot of children with attention deficit cannot do. They also may concentrate erratically. That is, he or she seems to be extremely focused one moment and then totally tunes out thereafter (Bain, 1991). Such marked focal inconsistency of concentration may be a symptom of attention deficits; it is a nearby universal finding in these children (Barkley, 1990).

The inconsistency itself generates confusion and accusation. Another reason why some children are not concentrating might be the fact, that they have problems at home that keep their entire attention focused.

Last week the writer of this paper had an interesting conversation with a father of an ADHD boy. He was confused when he told the assessment team: "Ron can concentrate, I know that [. . .] when he plays with his lego or draws something [. . .]. I've seen him pay attention for long periods of time, he can concentrate when he really wants do. But [. . .] he has difficulty concentrating on schoolwork or other activities that require sustained attention, and he therefore has trouble completing tasks. Ron has trouble following through on instructions, especially if they involve multiple steps. He appears not to listen [. . .]."

Since Ron loves to draw and one of his favorite hobbies is playing with his lego he is able to concentrate, for he wants to. Moreover these activities allow his interaction. Also motivation plays a large role in paying attention to a task (Levine, 1992; Silver, 1992; Taylor, 1990). When administering the Detroit Test of Learning Abtitudes Third Edition (Slosson, 1994) to Ron the diagnosis team noticed that he did a better job when he was able to use his hands to solve problems. He had fun with subtests requiring activities for his body (not only his brain) and it seemed as if he himself wanted to perform excellently.

This could cause the assumption that the child knows how to control attention which may not be the case. His ability to pay attention only at certain times can actually add to Ron's problems since he may get confused by his own inconsistency of concentration (Levine, 1987; Bain, 1991).

Continuity

When children happen to have continuity of attention they have the capacity to maintain a mental disposition. Children who have problems with this may experience mental fatigue and "burn out" easily when expected to concentrate. These children may seem tuned on when starting to read but soon they might "[. . .] lose their places as they periodically gaze off into space" (Levine, 1987, p. 23).

Monitoring

Monitoring is a very hard task that many children have problems with. Nevertheless it is one of the most important tasks that allows good performance. Children monitoring themselves are able to find errors and correct them. While reading aloud it would mean that the students ask themselves questions similar to these: Does this make sense? Did I say the word correctly? I missed one word - Should I start reading this sentence again? Cognitive therapy teaches children with a lack of monitoring self-control over their impulsive and inattentive behaviors and to take their time to listen and look for instructions (Bain, 1991).

The cognitive-academic performances of children with attention deficit vary and are dependent upon the cognitive strengths and weaknesses of the child (Bain, 1987; Goldstein, 1990). Researchers found that "[. . .] attention deficits are often accompanied by specific delays or weaknesses in various aspects of information processing, memory, or motor skill" (Levine, 1992, p. 467).

ADHD is not a learning disability but it is a related neurologically based disorder (Silver, 1990). It does not interfere wit the necessary psychological processes needed to learn. ADHD interferes with the individual's availability for learning (Levine, 1993b; Silver, 1990).

ADHD and Schooling

Meents (1989) contended that proponents of ADHD argued that the symptoms begin very early in life and are exacerbated when a child enters school and is confronted by classroom rules, teacher demands, and increased parental expectations. "It has been argued that symptoms typically worsen in situations that require self-control, as in the classroom" (Meents, 1989, p. 174). Goldstein (1990) agreed with this statement by emphasizing that "[a]ggression and impulsity, which frequently occur in ADHD children, are regarded as responses to the frustration of classroom failure" (p. 167). Environmental factors, including schooling, parenting techniques, diet, and toxins, appear to affect the disorder but they do not cause it. "The root of the problem lies in the person genetic make-up" (Naffe & Runge, 1994, p. 1).

Studies showed that ADHD is more frequent in males than in females. Bain (1991) and Naffe et al. (1994) talked about a proportion of six to one, whereas the DSM-IV (1994) talked about proportions from four to one and nine to one, depending on the setting. Hynd et al. (1991) listed a variety of studies that report that five to ten times as many boys suffer from ADHD. Moreover he conceded that recent research suggested that symptoms of inattention occur as frequently in girls. "Girls with Attention-Deficit-

Hyperactivity-Disorder may be a 'silent minority,' because they are usually not as flagrantly active or aggressive as their male counterparts and are thus less likely to be referred for evaluation" (Hynd et al., 1991, p. 174). "Girls, especially, seem more prone to this kind of attention difficulties" (Weaver, 1994c, p. 208). Thus, she pointed out, it may be that the symptoms of hyperactivity are the only distinguishing behavior accounting for the more frequent diagnosis of ADHD among boys.

No matter what gender, children with ADHD may experience school-related difficulties in the areas of academic performance and achievement, including completing assignments, following teacher directions, and mastering basic literacy skills (DSM-IV, 1994; Levine, 1992; Stoner, 1994). "[A]ttentional deficits, alone or in combination with learning disabilities are common precursors to underachievement in the classroom" (Ekwall, Shanker, 1983, p. 323). Neurobiological data shows that the syndrome is deeply rooted in the central nervous system. Sixty to eighty percent of ADHD children have additional learning disabilities (Naffe & Runge, 1994).

"Numerous surveys comparing ADHD students with their non-ADHD classmates have consistently shown them with lower retention rates, failing grades, and the need for special placement" (Taylor, 1990, p. 257). As estimated by Taylor 50% of all children diagnosed as having any subtype of ADHD are underachieving or under performing in school. Simply said an attention disorder invariably affects a child's ability to learn. Basically all major components of the ADHD syndrome interfere with classroom behavior. Problems sustaining attention, distractibility, and deficits in selective attention interfere with academic work. Impulsivity, for instance, leads to academic blunder and frequent errors.

For many children with attention or behavioral problems, the question of whether to medicate will come up sooner or later. Stoner (1994) talked about 750,000 children (more than two percent of the school population in the USA) who are prescribed a medication, stimulated medication being the most common treatment. "The purpose of medication is to enable AD[H]D students to focus their attention and behavior. The choice of medication depends on the problem" (Fouse & Brians, 1993, p. 23). One of the most common drugs for treating ADHD is called Methylphenidate better known as Ritalin (Bain, 1991; Stoner, 1994). Ritalin described as a "stimulant medication structurally similar to naturally occurring dopamine, seems to work by increasing dopamine and norepinephine in the brain" (Taylor, 1990, p. 440).

Research has demonstrated that Ritalin makes it easier for many ADHDers to attend to schoolwork and to think before acting (Bain, 1991; Goldstein, 1990; Moyer, 1994; Naffe & Runge, 1994). Stoner (1994) found that medication treatment has a positive impact on academic productivity in 70-80% of cases. Also Weaver (1994b) talked about "70 percent and 80 percent of children with ADHD [who] do exhibit a positive response to central nervous system stimulants (Ritalin, [. . .]), an improvement significantly greater than that perceived with placebos" (p. 496). A variety of studies were listed to support this statement.

Gillis (1994) talked about medication treatment such as Ritalin as one of the three most widely recommended interventions for ADHD students. Hynd et al. (1991) referred to stimulant medication in combination with behavior management procedures as being the most effective treatment. Nevertheless Hynd et al. (1991), Gillis (1994), and Meents (1989) stated that the medication which involved the administration of Ritalin, Dexedrine, and others has little impact on achievement. "The demonstrated effect on achievement, however, especially over the long term, was not clearly exhibited" (Meents, 1989, p. 172). It has been suggested that medication may be more useful for the teacher than for the child. "Consequently, medicating a student to alter disruptive behaviors and foster complacency for the benefit of the classroom teacher remains a possible explanation and justification for the popularity of this intervention" (Meents, 1989, p. 172). Hynd et al. (1991) even asserted, with research listed to proof this statement, that Methylphenidate (Ritalin) "does not appear to have a direct effect on regions of the brain typically associated with cognitive processes required in learning complex information" (p. 175).

Bain (1991) argued that Ritalin is known only to improve children's behavior in the classroom and elsewhere, but its effect on their learning processes are less clear. No studies were mentioned to support this idea.

Silver (1990) stated that approximately 80% of children and adolescents with ADHD can be helped significantly by medication such as Ritalin which increases for instance their attention span. Hynd et al. (1991) argued that approximately 25% of patients fail to respond to these medications.

Weaver (1994a) warned that it may take a while to determine the best dosage of Ritalin for an individual child or to find some other type of medication. Moreover she stated that the diagnosis is only one part of the equation and that there is too much focus in changing the kid through medication.

In an effort to avoid drug use, many parents of ADHD children seek other avenues of treatment, such as the Feingold Diet, megavitamin therapy, behavior modification, and psychotherapy. Theorists concede, however, that there is no evidence that these alternatives have an effect (positive) at all (Meents, 1989).

ADHD and Reading

Studies have shown that in the past decade, there has been an increase in the diagnosis of attention deficit for children who are experiencing difficulty with reading (Gillis, 1994).

The symptoms of the ADHD child impinge strongly on subjects like math, reading, and written expression (Bain, 1991; Ekwall & Shanker, 1983;

Levine, 1993b; Taylor, 1990). "It is clear that young hyperactive/attention disordered [. . .] children have poorer computational performance" (Zentall, 1990, p. 856). Zentall (1990) supported his statement by listing a variety of studies. ADHD symptoms are frequently observed in students "who are experiencing frustration and difficulty with classroom reading tasks" (Sawyer, 1989, p. 311). As a result of this many ADHD students may suffer from another learning disability. Taylor (1990) pointed to a 10 to 40% of ADHD children showing any other kind of learning disability. "Between 15% and 20% of children and adolescents with learning disabilities will have ADHD" (Silver, 1990, p. 395). Silver supported his statement with a variety of researches. Taylor listed in his book "Helping the hyperactive child" (1990) the most common areas of academic difficulty for ADHD children as being: reading, math, writing, attention focusing, thought processing, visual memory, organization, prioritizing, bridging, decoding, neatness, recall, spatial relationship, relationships between sounds, perceptual-motor coordination, and selective attention (p. 259-262).

Attention has an impact on the reading skill in general (Ekwall & Shanker, 1983; Ekwall & Shanker, 1989; Goldstein, 1990; Levine, 1993a, Levine, 1993b; Levine, 1993c; Richek et al., 1989; Samuels, 1994; Taylor, 1990; Weaver, 1994b; Weaver, 1994c). LaBerge-Samuels model of reading (Samuels, 1994) is used for better understanding the concept between reading and attention.

LaBerge-Samuels Model of Reading

This reading model, quoted most widely in reading method textbooks (Blanchard, Rottenberg & Jones, in Samuels, 1994), focuses on the two components of attention. "[M]ost psychologists would agree that it is, a prerequisite, that without the external and internal components of attention there can be no learning" (Samuels, 1994, p. 817).

External attention such as looking in books, has important implications for learning to read (Bain, 1991; Levine, 1993b; Samuels, 1994). Basically external attention such as directing one's sensory organs towards a task maximizes information input.

Internal attention represents the core component of the LaBerge-Samuels model and is represented in three characteristics. These are alertness, selectivity, and limited capacity (Samuels, 1994). This simply means to come in contact with a source, select appropriate information and pay attention to only one task at a time. It is important to select information from the variety because of the limited amount of attention available for information processing (Levine, 1993a; Levine 1993b; Samuels, 1994).

The relationship between the two components of attention and reading can be seen when thinking of reading as being a two folded process of decoding and comprehending. Internal attention is responsible for automatic information processing in reading. But first of all words must be decoded.

Moreover attention is required for processing an unfamiliar passage, even a simple one, for its meaning.

Many beginning readers experience difficulties with this task. They focus their entire attention on the decoding process. "If the reader's attention is on decoding and if attention can be directed at only one process at a time, the comprehension task is not getting done" (Samuels, 1994, p. 821). As a result of this attention in beginning reading needs to focus on the decoding and comprehension process alternately. This requires selective attention (Bain, 1991; Levine, 1993b; Mosse, Vol. 2, 1982). For many ADHDers this task is nearly impossible. These children have also difficulties in getting the decoding process automaticized. Automaticity is referred to, when a task no longer is in need of the once required attention. As a result of this ADHDers will rarely be in the position where their attention remains on comprehension. Attention is available for getting meaning from the printed words (Levine, 1993b). This is the case with fluent readers since their decoding is done automatically both tasks (decoding and comprehension) get done at the same.

Considering LaBerge-Samuels model of reading and the role attention plays in the reading process, the impact of attention deficits can be found in a variety of areas within the reading process.

Impact of ADHD on the Reading Process

First of all many ADHD children have problems with their visual memory which may be reflected in their poor ability to remember letters. Moreover these children may show difficulties in comprehending and decoding printed letters. As a result of this they may fail to decode and comprehend letter combinations and words. Besides they may show problems in understanding what they have read. This can have two reasons. These students may need their entire concentration to read, more precisely said, to decode the words in order to sound them out (Samuels, 1993; Taylor 1990). Or they may show difficulties in reading the words accurately (alexia, dyslexia). As a result of their difficulties with written language, especially when it comes to the point that they need to transfer the written language into oral expression, they may not understand written directions (Burns et al., 1992; Weaver, 1994b; Weaver, 1994c).

Many people even without showing severe attention deficits have difficulties following only written directions for they may cause confusion and may result in not mastering the required work. Moreover the researcher has noticed that following only written directions causes a lot of misunderstanding and may cause problems for the reader. When driving somewhere the driver often wants to rely on signs such as trees or specific buildings to make sure that his or her interpretation of the written notes is correct.

Furthermore, students diagnosed as having ADHD lack focusing their attention to only one activity such as reading. Since being able to read also means sustaining attention and blocking out distractions attention problems can hinder the reading of an advanced and more so a beginning reader (Ekwall, 1970). The reading process itself demands of the reader to avoid daydreaming (Mosse, Vol. 1, 1982). A child with superior intelligence may find learning to read, and later, reading too slow and therefore boring. Pearson in "The complete handbook of children's reading disorders" (Mosse, Vol. 1, 1982) gave a vivid description of such a child. "The daydreams soon became more interesting than was the unsolved problem of the first fifteen minutes and instead of occupying only her unemployed time they began occupying the whole hour. Consequently she learned nothing [. . .]" (p. 246). For children like this girl daydreaming leads to increasingly more serious failure in reading, which drives them into more intensive daydreaming. Levine (1993c) also stressed the importance of being able to filter out one's daydreams in order to concentrate on the reading process.

The reading process also demands persistence in the task itself (Bain, 1991; Ekwall, Shanker, 1983; Levine, 1993c). The problem of ADHD children is their lack of ability to attend to a task of learning such as reading (Gillis, 1990). "I have examined children who could not read just because they could not concentrate long enough to learn it" (Mosse, Vol. 2, 1982, p. 556). Reading is so cumbersome for them and takes so much time that they become fatigued sooner than proficient readers. This decreases the time they can concentrate. They start to daydream and find an endless number of activities to do and to think about that are more exciting than reading. In fact, the reading by ADHD students is likely to be unpredictable because of their tendency to tune in and out (Levine, 1993b). They may read an entire chapter while thinking about two or three other matters and have no idea what they have just read. Only if one concentrates on the written language he or she might be able to gain enough information from the written words to understand the meaning. This calls for a selective attention from the reader. "A child must learn to ignore everything on the page that interferes with the discrimination of letters from their background and from each other" (Mosse, Vol. 2, 1982, p. 518-19). He or she must find out, what is important to focus on (a neighbor's laughing versus his or her own reading) and be able to distinguish important from unimportant facts during the reading process (Bain, 1991). "Selective attention is a critical problem for many students with reading disabilities" (Richek et al., 1992, p. 292). While the teacher is trying to teach a word in reading, a lot can distract the students and take his or her focus away from the reading instruction. Without selective attention the student is overwhelmed with other stimulation. Unable to receive the desired information the student fails to learn reading skills.

Moreover reading and comprehending requires the student to organize the read material. Students need to understand the concepts of past, present, and future. ADHD children may have difficulties with this task especially when asked to label, classify, and sort the gathered information. Within this process students need to prioritize the information. It is very difficult for many students identified as having ADHD, to select the main ideas in reading. Besides they have more problems to state and draw conclusions independently than their non-ADHD classmates.

In addition, problems in thought processing may be the result of attention deficits (Ekwall & Shanker, 1983). Children who have problems concentrating are likely to have trouble learning to read (Burns et al., 1992). They focus on the reading process itself which may result in difficulties in understanding and organizing their thoughts. Likewise it is difficult for them to remember their reading and therefore to restate thoughts and concepts in similar words. While these ADHDers may comprehend sentences, their recall is poor (Levine, 1993b). It is very frustrating if one works with children whose thought processing is interfered by their attention difficulties. Ekwall and Shanker (1983) referred to this problem as the "inability to hold information in memory until needed" (p. 317). The teacher may feel that the student is knowledgeable but yet not able to organize his or her thoughts to talk about what he or she has read (Levine, 1993c). Children who rather blurt out answers before thinking and organizing thoughts fall under this category (Bain, 1991; DSM-IV, 1994; Ekwall & Shanker, 1983; Goldstein, 1990; Levine, 1993a). This manner is referred to as impulsivity. This problem is illustrated by the student who guesses at words rather than working them out using word attack skills (Ekwall, Shanker, 1983).

To truly be able to read the students need to activate their knowledge of language, vocabulary, comprehension skills and prior knowledge (Levine, 1993c; Weaver, 1994b). Using prior knowledge to make sense of the read material is referred by Taylor (1990) as bridging. The reader needs to build a bridge between the information in the text and the knowledge stored in the schemata in his or her head (Samuels, 1994). For students with attention deficits such as ADHDers, it is very difficult to relate one fact or event to another one. Those children may also have problems with sentence reading because they read in a superficial manner failing to make good use of context clues, guessing at meaning, and displaying a typically inconsistent focus (Levine, 1993b). Another difficulty is that careful reading may be replaced by overreliance on probability or context which allows the students to do too much skimming through the text. Often students with attention deficits have a tendency to impose their own ideas on the detail in the text.

ADHD students may also show more decoding problems than their counterparts (Ekwall, Shanker, 1983; Taylor, 1990). Therefore they tend to concentrate only on the decoding process which may lack their comprehension (Levine, 1993c; Samuels, 1994). They have to concentrate so hard on the techniques of reading that they cannot pay much attention to the content (Mosse, Vol. 2, 1982).

Weaver (1994a) suggested that teachers can help those students who do not monitor comprehension by getting them to listen to themselves read, and to ask themselves questions like: Does that sound like language? (when a miscue does not fit grammatically in the context); or: Does that make sense? (when a miscue does not make sense in the context).

Finally, the perceptual-motor coordination may be as well impacted by a student's ADHD symptoms. ADHD children show difficulties with fine-motor or gross-motor coordination. Their kinesthetic unawareness hinder eye-hand coordination (Taylor, 1990). Children who have difficulties maintaining place and 'jump through the lines' when reading fall under this category. It is important for these children to develop kinesthetic strengths (Richek et al., 1989). "Children who are distractible can concentrate better when they use their muscles in some way" (Mosse, Vol. 1, 1982, p. 308). To help ADHD students to develop kinesthetic strengths teachers can encourage the children to rather form letters with their entire body to be able to recall them later or even perform a play to more easily remember a script. These suggestions were mentioned by Weaver (1994b) in connection with the checklist for identifying kinesthetic strengths (p. 288).

Labeling children who show any disability in achieving classroom goals, such as failure to read, has been very common within the last years. ADHD is one of those labels. "They should not be labeled as disordered individuals until we have made appropriate adjustments to their reading instructional programs [. . .] and have evidence that they have neurological or central-processing impairments" (Gillis, 1994, p. 123). Meents (1989) conceded that educators tended to rapidly identify children who fail to learn and place them in categorical programs. McGill-Franzen (1987) also warned from misclassification and demonstrated how it can further contribute to an environment of inappropriate instructional programming.

CHAPTER III. METHODOLOGY OF THE STUDY

This investigation was designed to find out if ADHD symptoms were observed among Austrian elementary students by their teachers. Specifically, this study investigated to what extent behaviors connected with ADHD appeared in Austrian classrooms as viewed by teachers. Furthermore the researcher of this study wanted to know how teachers cope with these behaviors during their instruction. Thus, the major research questions addressed were whether Austrian elementary students showed ADHD behaviors and how their teachers coped and helped their students.

Survey Development

The information about the students and their teachers' reactions was drawn from the results of a conducted survey. A survey, as defined by Ferber and others (1980) is "[. . .] a method of gathering information from a number of individuals, a "'sample'", in order to learn something about the larger population from which the sample has been drawn" (p. 3). Hence surveys seek information on conditions as they occur, without interference by the researcher (Gay, 1987). Surveys can be classified in a number of ways. One dimension of classification is by sample size and type. Surveys can also be classified by the method of data collection. Thus there are mail surveys, telephone surveys, and personal interview surveys. In this study, the researcher used a combination of mail survey and personal interview survey. The latter only when additional information or clarification was needed.

In this study, the methodology that was used paralleled that of Fisher and French (1993) in their baseline study "Establishing a profile of at risk children: An urban school study" in which a team studied six inner-city Toledo schools. Fisher and French also used a list of symptoms to identify students that showed ADHD behavior and they used the same statistical procedures. Their survey consisted of two parts. Four hundred-and-forty-one students were administered the Test of Nonverbal Intelligence Second Edition (Slosson, 1990) and the Test of Early Reading Abtitude Second Edition (Slosson, 1989). After the assessment teachers were given a list of 74 behaviors and were asked to rate the severity of each behavior for each student in their classes. The 25 most significant behaviors that correlated negatively with reading scores were identified and became the basis for a diagnostic screening instrument.

In order to find out whether ADHD related symptoms were present in Austrian elementary classes, the researcher developed a list of ADHD related behaviors. In order to accomplish this, the researcher conducted an extensive research of all related materials, such as the SNAP checklist (Kirby & Grimley, 1986). The SNAP checklist is one of the lists that allows educators to find out the difficulties their students encounter. Based on the research of the evaluation forms, a target list of behaviors related to ADHD was identified.

Parallel findings were present in the research of French and Polzer-Landretti (1995). Thus the researcher of this study used the same twenty-five behaviors drawn from various sources and listed by the previously mentioned research team (p. 10-11). This list is presented in Figure 1 (see page 40).

The first twelve listed symptoms, consistent with inattention and disorganization, play an important role in the child's success in learning. In that sense they play a tremendous role in the student's ability to study, calculate or read. Therefore it seems very natural that students who exhibit a certain amount of those behaviors may lack in academic performance. Symptoms 13 through 25 are consistent with hyperactivity and impulsivity. Those symptoms are related to achievement in a somewhat broader sense. Students who are not able to sit still or act before thinking have a major disadvantage when compared to their non hyperactive and impulsive peers. This is especially because they do not have the chance to learn because their body is captured with something more interesting. In order to learn these students have to control their body and mind which is especially difficult for younger learners.

This survey consisted of two parts. The first part of the survey used the 25 ADHD related behaviors (see Figure 1 on page 40) as listed by French and Polzer-Landretti (1995) to determine whether and to what extent ADHD related behavior occurred among Austrian elementary students. These 25 ADHD symptoms were "[. . .] drawn from various sources [. . .]" (French &

Polzer-Landretti, 1995) and supported by research the investigator of this research had conducted. The symptoms were listed vertically in the curriculum map. Horizontal numbers from 1-24 (and 25-30 on the additional curriculum map) referred to the students. On the curriculum map teachers were asked to indicate the grade level and school in which they were teaching for later comparison and interpretations on the part of the researcher. For every student in their class each teacher had to fill out one column to indicate the amount the various behaviors occurred. Teachers were urged to fill out the section for each student by identifying the amount of each specific behavior occurring within each student's overall behavior.

Since the researcher was interested in the amount and the intensity ADHD related symptoms occurred in the classes, time was an important factor when setting up the coding. Coding numbers started from one through four where four indicated that the behavior was occurring most frequently. The coding system paralleled the one used in Stephen McCarney's "Attention deficit disorder evaluation form" (1989). This school version rating form provided the observer with five quantifiers from zero to four to rate the student's behavior. Zero was for "does not engage in the behavior"; one stood for "one to several times per month"; two referred to "one to several times per week"; three indicated that the behavior occurred "one to several times per day"; and four indicated that the behavior was observed "one to several times per hour".

Figure 1: Twenty-five ADHD symptoms

B	Description
1	difficulty following through on instructions
2	difficulty organizing things
3	difficulty finishing task
4	loses things
5	easily distracted
6	does not seem to listen
7	needs a lot of supervision
8	difficulty concentrating/sustaining attention
9	feels 'bored'
10	exhibits superficial concentration
11	is inactive/passive toward learning
12	careless errors
13	excessive running and climbing
14	difficulty playing quietly
15	talks excessively
16	acts before thinking
17	calls out in class
18	difficulty staying seated
19	fidgets and squirms
20	interrupts or intrudes
21	difficulty waiting for turn
22	blurts out answers
23	always on the go - appears driven
24	excessive need for motivational stimuli
25	actions that alienate peers

Note: Symptoms one through twelve are consistent with inattention and disorganization. Symptoms thirteen through twenty-five are consistent with hyperactivity and impulsivity. From Attention deficit and reading instruction (p. 10-11), by French and Polzer-Landretti, 1995, Bloomington: Phi Delta Kappa Educational Foundation. Copyright 1995 by Phi Delta Kappa Educational Foundation. Adapted with permission from the authors.

The researcher of this study provided the teachers with four quantifiers. The reason for using four instead of five quantifiers was, that research had shown (Gay, 1987) that when subjects are presented with an odd number of quantifiers, one is in the middle and is construed as a neutral response. As a result, subjects often stick to the most convenient answer which would be for example the neutral "sometimes". More specifically the numbers on the rating scale for this research referred to the following four phrases. "One" indicated that the student "seldomly or never engaged in this behavior". "Two" indicated that this behavior was observed "one to several times per month". Observing the behavior "one to several times per day" referred to a "three" in the table. A "four" in the table indicated that the behavior was observed in the student "one to several times per hour".

Teachers were also asked to indicate the student's reading ability, needed for later comparisons. They were asked to follow the following coding system when ranking their students according to their reading ability. Five quantifiers were used that paralleled the Austrian grading system to make teachers' ranking of their students easier. Numbers from one through five were utilized, whereas "one" indicated the best reading ability. More specific "one" referred to the phrase "excellent", "two" stated the student's reading ability was "very good", "three" referred to "good" reading abilities, "four" indicated that the student's reading ability was "satisfactory", and "five" referred to the student's reading ability as being "not satisfactory".

In the second part of the survey the researcher wanted to find out how teachers react to symptoms that show severe problems (indicated with at least a "3" among one student) among their students. As a result of this, teachers were urged to list or write down in essay form how to help those students. Teachers had to indicate how they react and behave when symptoms of ADHD appeared at least one to several times per day (indicated with a "3" or "4" in the table) among at least one student. Each symptom was looked at separately and teachers wrote down notes how they help their students.

This second part of the research aimed toward developing a list of recommendations for teachers who might encounter any ADHD related symptoms in their classroom.

Subjects

The study was conducted using survey responses from teachers in 37 Austrian elementary classes and 22 schools. Teachers were drawn from personal contact who identified additional teachers in their schools to participate. Nineteen classes from eight schools were from the city and the surrounding suburbs of Salzburg. The remaining 18 classes were drawn from 14 schools in the county of Salzburg and Tyrol. The sample for this study consisted of 750 Austrian elementary students and their 37 teachers. See Table 1 on page 50 for additional information on the 37 participating classes.

Elementary teachers from grade 1 through 4 were asked to voluntarily participate in this survey. Teachers were asked to observe and rank their students. Among the 750 observed students, 397 were male and 353 were female. For additional information on the participating classrooms see Table 1 on page 50.

Procedures

A survey was conducted among 37 elementary teachers to find out whether ADHD related behaviors occurred in Austrian elementary classrooms. Moreover the researcher wanted to find out how teachers cope with the occurring behaviors. As a result of this, each participant elementary teacher received a survey package, containing of an introductory letter, a curriculum map of behaviors, and instructions of how to participate in the study.

The packages contained the introductory letter, the instructions on how to participate in the survey, the curriculum map, listing the 25 ADHD related behaviors, and a stamped return envelope (for mailed out packages only).

The introductory letter explained the purpose of the survey to only a certain extent in order to receive unbiased results. The teachers were told that the study aimed to find out to what extent ADHD related behaviors occurred in Austrian elementary classrooms. Moreover, the letter stated that twenty-five symptoms were sought, but they were not grouped into hyperactive, impulsive, inattentional and disorganizational behavioral problems. Thus, the teachers had no idea how the data was used, and were able to fill out the curriculum map unbiased. See Appendix B for the original letter in German and its English translation.

The second part of the package contained the instructions. Teachers were told how to conduct their observations and how to record them. They were told that the survey contained two parts: the curriculum map which needed to be filled out and an open ended question to answer as a follow up to their observations in their classrooms. See Appendix B for the original instructions in German and the English translation.

The third part of the package was the survey itself. See Appendix B for a copy of the survey.

Once the researcher received the data, the following questions guided further investigations of the data.

1. Did students in these observed classrooms who exhibited ADHD symptoms show more difficulties in reading than their non-ADHD peers?
2. Was there a difference among the observed Austrian girls and boys in relation to the findings of ADHD? Were more boys or girls observed as having severe ADHD symptoms?

3. Which were the most observed symptoms (being severe indicated with a three or four in the curriculum map)
4. What did the teachers report most frequently as aids to help students with specific ADHD related symptoms?

Since the survey was conducted among elementary teachers in Austria, all correspondences were held in German. Hence, the package, sent to the 37 elementary teachers, was written in German. The researcher decided to conduct the survey in German in order to get more teachers involved in the study who might not have been willing to take their time to work through the English version. Moreover some terms would only confuse the teachers, and other terminology could not be strictly translated. A simple example would be the term ADHD. Teachers in Austria would not know the terminology of attention deficit hyperactivity disorder since this term is called POS (psycho-organic-syndrome) among educational experts in Austria. To assure that the translations of the package material were content wise identical a German-English professor and a graduate student from Austria were sought for revisions and comments.

Data Collection

Each teacher who participated in the survey received a survey package by the middle of November. Packages were either mailed out or hand delivered by Mrs. Heide Ruschko who voluntarily engaged as a contact person in Austria.

Teachers were urged to return the survey as soon as possible but not later than the 15th of December. The last hand delivered packages were collected that day as well. Whenever clarification was needed additional information about their ideas was sought by interviewing teachers individually.

Data Analysis

The first part of the questionnaire, the curriculum map itself, was analyzed in conjunction with the Data Entry Center and the Statistical Service Center at the Bowling Green State University. The Statistical Service Center used the SAS system for all statistical analyses. To answer the first question reading scores were correlated to all and each individual of the 25 ADHD behaviors. To assess whether gender based significant differences existed among the 750 Austrian students (question two) when focusing on their ADHD scores, an ANOVA was conducted. To answer question three, to identify the most severe ADHD behaviors among the students, basic frequency counting and a Tukey's Studentized Range Test was conducted.

Content analysis, as defined by Gay (1987) is "[. . .] the systematic, quantitative description of the composition of the object of the study" (p. 236). It "[. . .] uses a set of procedures to make valid inference from text" (Weber, 1990, p. 9). Content analysis can be used for many purposes. Hence a variety exists among content analysis studies which can involve basic frequency counts or complex investigations of the studied material (Gay, 1987, Weber, 1990). In reviewing the current literature a variety of studies were found that involved analyzing textbooks to determine the existence or extent of bias in the presentation of materials (Galie, 1993; Lucal, 1994) or the readability level of material (Jones, 1993; Long, 1991). In the second part of this study content analysis was used by counting the frequency of the teacher recommended ideas and suggestions.

More specific the following steps were used to gather the required information. First the researcher listed all 25 ADHD related behaviors. After that she started to look through the recommendations on the first questionnaire. Then suggestions were listed in the adequate categories, which identified the specific ADHD behaviors. After the researcher was finished with one questionnaire the next questionnaire was analyzed in the same way. Strategies were only listed once in each category. Once the researcher had looked through all 37 questionnaires with the same procedure, she returned to each questionnaire again. This was necessary to make sure all strategies were listed in the recommended areas. After a list of recommendations for each ADHD behavior was established by looking through the questionnaires content analysis was used by counting the frequency of the listed strategies.

Questionnaires were also given to a graduate student who was not majoring in education. He worked through the questionnaires in the same way as the researcher. It was necessary to analyze the data by an additional person to minimize the possibility of biased data. Moreover the researcher also wanted to assure that the frequency in which the strategies were recommended was accurate. Thus, it helped in eliminating the possibility of misinterpreting the final results. After that the results were compared and differences were discussed. The result was a list of ideas Austrian elementary teacher suggested for ADHD related behavior in general, and each individual ADHD symptom. Teachers' ideas in each category were ranked from most to least recommended.

The final step was the translation of the list. To assure that the translation was accurate a German-English professor and a graduate student were sought for revisions. See Appendix C for the entire listing.

The following steps were used to find the percent of each of the teacher's recommended strategy. First the researcher skimmed through the thirty-seven curriculum maps to find out which behaviors were severe (indicated with a "three" or "four" for at least one student in the classroom) in each specific classroom. Results were gathered and put into a spreadsheet in the following way. By looking at each classroom separately the teacher noted the respective highest score for each ADHD behavior among all students. The scores "three" and "four" were put in the spreadsheet accordingly.

Whenever students only engaged in this behavior "seldomly or never" (indicated with a "one" in the curriculum map) or "one to several times per month" (indicated with a "two") the researcher left the spot empty. This helped to find out how many teachers listed specific ADHD behavior as a severe problem. The remaining 36 curriculum maps were looked through in the same manner.

By counting the classrooms where the specific behaviors were severe the researcher developed the total amount of teachers that had to come up with recommendations for each individual ADHD behavior. For instance the behavior "looses things" was severe among 29 classrooms, thus 29 teachers wrote down their ideas for helping their students. Thus in this example 29 equaled 100 percent. The spreadsheet outcome then helped the researcher to establish the respective percentages. To continue the previous example out of the 29 teachers 22 recommended to "use exercise books for each subject instead of too many loose papers" which made a percentage of 76.

Table 1: Classes participated in the survey

Questionnaire	Location	Grade	# students	Male	Female
1	C	K	12	10	2
2	C	1	23	13	10
3	T	1	19	11	8
4	T	1	18	7	11
5	T	1	15	8	7
6	S	2	15	9	6
7	S	2	26	15	11
8	C	2	17	11	6
9	C	2	26	16	10
10	C	2	22	14	8
11	T	2	22	10	12
12	T	2	29	13	16
13	T	2	15	10	5
14	T	2	17	11	6
15	T	2	27	11	16
16	T	2	20	8	12
17	T	2	23	9	14
18	T	2	10	8	2
19	S	3	24	15	9
20	S	3	25	13	12
21	S	3	21	14	7
22	C	3	14	8	6
23	C	3	20	14	6
24	C	3	19	9	10
25	C	3	22	10	12
26	C	3	14	5	9
27	T	3	23	14	9
28	T	3	18	7	11
29	T	3	18	8	10
30	T	3	24	16	8
31	S	4	22	9	13
32	S	4	16	8	8
33	S	4	22	8	14
34	C	4	26	10	16
35	T	4	25	14	11
36	T	4	21	12	9
37	T	4	20	9	11

Note. Classrooms were ranked according to their grade level. Column two listed the location of the classroom: S = suburbs of Salzburg; C = city of Salzburg; T = counties Salzburg and Tyrol.

CHAPTER IV. RESULTS OF THE STUDY

The purpose of this study was to investigate the severity of ADHD behaviors occurring in participating Austrian elementary classrooms and to report the aids suggested by the concerned teachers. This paper was designed to provide Austrian elementary teachers with an analysis of most frequently observed ADHD behaviors and an overview of the suggested aids. Being aware of the results would allow Austrian elementary teachers to focus on the most severe behaviors out of the list of 25 ADHD symptoms, as well as to supplement those behaviors while instructing their students. Teachers could concentrate on a smaller set of behaviors, and students can be helped more. It has been found to be easier for a teacher to work toward helping students when focused on a smaller set of severe behaviors. Providing teachers with adequate solutions in these areas increases the help teachers can provide their students. Specifically, this study aimed to answer the following questions:

1. Did students in the observed classrooms who exhibited ADHD symptoms show more difficulties in reading than their non-ADHD peers?
2. Was there a difference among the observed Austrian girls and boys in relation to the findings of ADHD? Were more boys or girls observed as having severe ADHD symptoms?

3. Which were the most observed symptoms (being severe was indicated with a three or four in the curriculum map) in the classrooms?
4. What did the teachers report most frequently as aids to help students with specific ADHD related symptoms?

To respond to question one, whether students who exhibited ADHD symptoms showed more difficulties in reading than their non-ADHD peers, the analysis of variance procedure was completed. This was done to determine whether students identified as exhibiting more symptoms of ADHD were in lower reading groups -- significant of more problems in reading. Conversely, the ANOVA was used to decide whether students with fewer ADHD symptoms were in higher reading groups -- indicative for fewer problems in reading. Table 2 on page 53 was included to present the results of this ANOVA. Reading scores ranged from one through five. Since only five out of the 750 observed students were identified as having a reading score of five the researcher decided, in conjunction with the Statistical Consulting Center, to add those five students to the group of "four" in order to be able to compare the results better. A group of only five students would have made it impossible to draw accurate conclusions among the different reading levels and/or false conclusions would have resulted. Thus, in order to complete the study, reading scores ranged from one through four, where the last group

(group "four") combined students indicated with a reading level of four ("satisfactory") and five ("not satisfactory").

The conducted ANOVA revealed the following results. When comparing the overall ADHD mean (40.9) to the reading levels a significant difference was determined (p=.0001). See Table 2 on page 53 for results.

Table 2: Analysis of Variance for ADHD and Reading Level

	df	F
Reading Level	3	52.8*

Note. *p=.0001.

Since the obtained F was considered to be statistical significant, the researcher explored the differences among all possible pairs of reading group means by conducting a post hoc comparison. The Tukey honestly significant differences method (HSD) for variable ADHD compared the ADHD means across all four reading levels. Results indicated that ADHD means differed significantly across all reading groups (see Table 3 on page 54). For this test, any mean difference that exceeded 4.51 was statistically significant at the .05 level. More specifically, there were six possible mean differences in this investigation. Among them the highest differences were found between group one versus group four for a difference of 19.58; group one versus group three for a difference of 13.87; group two versus group four for a difference of 13.17. Comparing all differences with the critical value (4.51), it became clear that the difference between all the possible pairs of reading groups was significant. In general, students in the lower reading groups showed higher ADHD scores than their peers in higher reading groups.

Table 3: Reading Level Comparison by ADHD Means

Mean ADHD	N	Read Level
54.33 [a]	54	4
48.62 [b]	138	3
41.16 [c]	256	2
34.75 [d]	302	1

N= number of students in each level. Means that do not share subscripts differ at $p<.05$ in the Tukey honestly significant difference comparison.

Based upon the results on the ANOVA and the Tukey honestly significant differences method it appeared that students who exhibited ADHD symptoms showed more difficulties in reading than their non-ADHD peers.

To answer question two whether there was a difference among the observed girls and boys or not, the analysis of variance statistical procedure was completed. This was done to determine whether boys showed more ADHD symptoms than their female peers. Conversely, the ANOVA was used to investigate whether girls exhibited more ADHD behaviors than their male peers. Table 4 on page 55 was included to present the results of this ANOVA.

Table 4: Analysis of Variance for Gender

	df	F
Gender Means	1	98.25*

Note. *p=.0001

The Tukey honestly significant differences method (HSD) for variable ADHD was then conducted as a post hoc test. Any mean difference that exceeded 2.023 was statistically significant at the .05 level. The boys' mean was 45.71, and the girls' mean was 35.5. This indicated, that the overall mean of all 25 ADHD behaviors was higher among the observed boys than the girls. This post hoc test revealed a significant difference (10.21) in gender when comparing the ADHD scores (p<.05). See Table 5 on page 55.

Table 5: Gender Comparison by ADHD Means

Gender	N	ADHD Mean
Male	397	45.71^a
Female	353	35.5^b

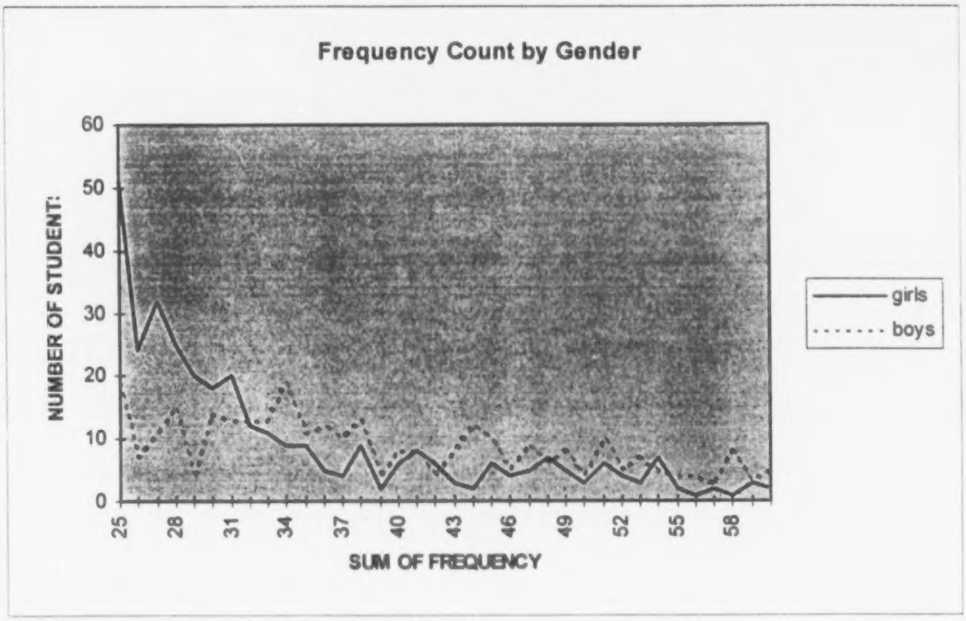
Note. Means that do not share subscripts differ at p<.05 in the Tukey honestly significant difference comparison.

Another way to look at differences in gender was done by frequency counting. To give a closer look to the frequency of observed behaviors a basic frequency count was conducted. Since there were 25 behaviors, the minimum of the sum of all 25 behaviors was 25, and the maximum, according to the teachers' observations was 96. See Figure 2 on page 57 and Figure 3 on page 58 to compare the amount of girls and boys for each frequency sum between 25 and 96.

In general, girls appeared to be more controlled than boys. Fifty-one girls had a total of 25 point when adding the frequency of observed behaviors. Only 19 boys have the same score. Starting at the total score of 34, the remaining girls' scores were one-digit. The first one-digit entry for boys was at the total score of 26. Only seven boys were reported with a total of 26 points which intended that fewer boys had lower total points. The higher the total points became the more boys were identified in that group. The other one-digit entry at the beginning among boys was at score 29. Only four boys fell into this category.

On average, 13 boys (mean=13.11) were observed with a total score of between 30 and 38 with the highest entry at 19 and the lowest entry at 10. Looking at the same span within the girls' sum of scores the mean was 10.78. This score occurred considerably low, but only because starting at item 34 the amount of girls was one-digit. Looking at the mean of 30 through 33 (15.25) one can see the high amount of girls within just these four scores.

Figure 2: Frequency Count by Gender



Note. Sum of frequencies was determined by counting each student's total sum of scores within all 25 ADHD behaviors. Students received sum scores between 25 and 96. In this figure sum scores between 25 and 60 and their frequency, were listed.

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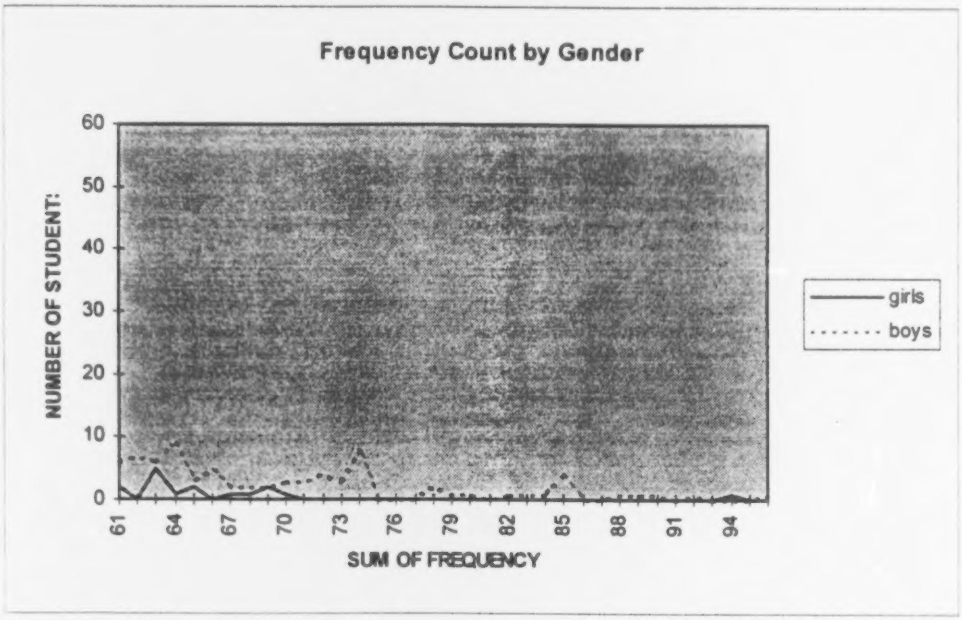
Figure 3: Frequency Count by Gender



Note. Sum of frequencies was determined by counting each student's total sum of scores within all 25 ADHD behaviors. Students received sum scores between 25 and 96. In this figure sum scores between 61 and 96 and their frequency, were listed.

The remaining five scores however, only had a mean of 7.2, which indicated that the amount of girls was rapidly dropping the higher the scores got.

The boys' last two-digit entry was at the total score of 45, which proposed that their continuous one-digit entries started eleven points after the girls' continuous one-digit entry. When comparing 2 and Figure 3(on pages 57 and 58) one can notice that more girls had total frequency sums between 25 and 32 (this indicated that in average, girls only received either "one" or "two" as a descriptive to describe their behaviors in class) . Starting at 33 more boys were identified with the specific scores.

Only a few sum of frequency scores were identified that showed a higher number of girls than boys such as score 42 (four boys, six girls) or 48 (six boys, seven girls). Most of the remaining higher scores were dominated by boys. Starting at a total score of 52 no more than 7 girls or/or 9 boys were recognized for each score. Only one girl fell in the category between 71 and 96 (total score of 94), whereas 38 boys fall in-between these scores. In general, these findings established the fact, that there was indeed a significant difference (mean difference=10.21) in ADHD behavior when comparing the gender.

Based upon the results on the ANOVA, the Tukey honestly significant differences method, and the conducted frequency counts it appeared that boys exhibited significantly more ADHD symptoms than their female peers.

To answer question three the most severe ADHD behaviors were identified. In order to do that, the researcher compared the severity of the behaviors by using their percentages. Severity of a behavior was indicated with a "three" or "four" in the curriculum map. Any behavior that was reported as severe, with a score of "three" or "four" on the curriculum map, and was found among 20% or more of the students was identified as one of the most severe behaviors. The result was a list of seven behaviors. For a list of the seven ADHD behaviors, their means, percentage of occurrence, and standard deviations see Table 6 on page 60.

Table 6: Frequency Count of the most Observed Behaviors

	Description	%	Mean	Std Dev
B13	excessive running and climbing	28.6	1.90	.896
B12	careless errors	25.7	1.95	.879
B10	exhibits superficial concentration	25.2	1.81	.982
B5	easily distracted	25.0	1.87	.945
B15	talks excessively	24.2	1.94	.896
B8	difficulty concentrating	22.2	1.80	.939
B6	does not seem to listen	20.9	1.74	.908

Note. Behaviors were ranked according to their percentages.

The highest percentage of occurrence was found at behavior thirteen "excessive running and climbing". Twenty-nine percent of the observed students (approximately 215 students) received a "three" or "four" in this category. The second highest percentage was found at behavior twelve "careless errors" (25.7%). Among the seven behaviors, two more were at or above 25%. These were behavior ten "exhibits superficial concentration" (25.2%), and five "easily distracted" (25%). The remaining three behaviors revealed between 24.2% (behavior fifteen) and 20.9% (behavior six). Among those seven behaviors, means clustered around 1.86 with the highest mean at 1.95 (behavior twelve) and the lowest mean at 1.74 (behavior six). On average, students scored a "two" in any of those seven behaviors.

As a further analysis, the researcher attempted to determine the relationship between the seven most frequently occurring behaviors and the 25 ADHD behaviors. Specifically, the researcher wanted to find whether the seven behaviors could be used instead of the 25 behaviors to identify students at-risk because of ADHD. To ascertain that those seven identified behaviors were accurate representatives of all 25 ADHD behaviors, the profile mean was correlated with the total ADHD mean and the reading scores. Moreover, the researcher also compared gender profile means.

Pearson correlation analysis was used to measure the degree and direction of linear relation between the profile mean (13.02) and the total ADHD mean (40.9). The coefficient (symbolized r) could range between +1.00 and -1.00. A perfect positive relationship would be reflected by an r of +1.00; a perfect negative relationship by an r of -1.00; and a lack of any relationship by an r of zero. Results indicated a correlation of +.938 between the profile mean and the ADHD mean (see Table 7 on page 62). This correlation coefficient indicated that a significant positive linear relationship could be found (p=.0001). The numerical value of the correlation being +.938 reflected that the degree to which there was a consistent, predictable relation was rather high. To describe how accurately the profile could predict the overall ADHD score the correlation was squared. Thus, the correlation provided 88% accuracy. These results lead to the consumption, that the profile (the top seven behaviors) represented a good and accurate profile that could be used instead of all 25 ADHD behaviors or to predict the ADHD score. It should be added that notions of causality, or cause and effect, are not inherent in product-moment correlation. Even though the profile mean significantly correlated with the reading mean this did not imply that one caused the other.

Table 7: Correlation of Profile and ADHD Means

	Profile Mean
ADHD Mean	.938*

Note. Profile= top seven most observed ADHD behaviors. * p=.0001

Based upon the percentage of occurrence seven behaviors were considered among the most frequently observed ones. These seven behaviors were numbers five, six, eight, ten, twelve, thirteen, and fifteen. Based upon the results on the Pearson correlation it appeared that these seven behaviors were accurate predictors for students at-risk because of ADHD.

The preceding tables and figures presented the fact, that ADHD behaviors do occur in Austrian elementary classrooms in alarming percentages; especially when examining the top seven ADHD symptoms (profile) among the 750 participating students. Besides, results indicated significant gender based differences in the severity of ADHD. The researcher was also able to establish a profile (a list of the top seven observed behaviors) and proof its accuracy as a measure of at-risk ADHD behavior in the observed classrooms.

The fourth question of this research paper was geared toward the aids teachers reported when any ADHD behavior was severe among their students. To identify the total number of teachers who reported recommendations for each individual behavior see Table 8 on page 64. The following results were determined from the 37 teacher responses on the survey. Ideas such as "talking to the student", "talking to the entire class and discussing the problems", "talking to parents and making them part of their child's educational career", and "helping as a teacher whenever help is needed", reached a percentage of 100.

The most recommended strategies (80% and higher) in any of the 25 ADHD behaviors are reported here. See Appendix C for a detailed list.

Table 8: Classrooms showing severe ADHD

ADHD SYMPTOMS	# classes	% classes
difficulty following through on instructions	35	95%
difficulty organizing things	35	95%
difficulty finishing task	34	92%
loses things	29	78%
easily distracted	36	97%
does not seem to listen	34	92%
needs a lot of supervision	35	95%
difficulty concentrating/sustaining attention	36	97%
feels 'bored'	29	78%
exhibits superficial concentration	32	86%
is inactive/passive toward learning	31	84%
careless errors	35	95%
excessive running and climbing	36	97%
difficulty playing quietly	34	92%
talks excessively	35	95%
acts before thinking	30	81%
calls out in class	34	92%
difficulty staying seated	27	73%
fidgets and squirms	31	84%
interrupts or intrudes	28	76%
difficulty waiting for turn	31	84%
blurts out answers	30	81%
always on the go - appears driven	27	73%
excessive need for motivational stimuli	34	92%
actions that alienate peers	30	81%

Note. Percentage of classrooms showing severe ADHD behaviors ADHD symptoms and the number and percentage of classrooms that exhibited severe problems with these symptoms. Column two lists the amount of classrooms where teachers observed severe (indicated with a “three” and “four” among at least one student in the curriculum map the 37 teachers filled out) ADHD symptoms among their students. Column three indicates the percentage.

Eighty-six percent of the teachers suggested that they "give students exercises they can really handle" when they showed "difficulty following through instruction" (symptom one). In this section a variety of suggestions such as "working with student individually", and "calling student by name", were listed by between 49% and 74% of the individuals who had students demonstrating the ideas. A similar high percentage was yielded when students showed "difficulty organizing things" (symptom two). Eighty-nine percent of the responding teachers suggested to "show and talk to students how to keep things tidy". The highest score throughout all 25 symptoms was reached with the suggestions for symptom three. Ninety-four percent of the 34 teachers agreed that the best way to help students that have "difficulties finishing a task" is by "individualizing the work for the student". For students that are "easily distracted" (symptom five) teachers suggested that they allow students to "use whole body exercises after sitting for a while" (89%), and "integrate activities that promote concentration" (81%).

Most recommended ideas for symptoms six through sixteen (except symptom nine) only reached between 34% and 69%. The most recommended idea for the category "feels bored" (symptom nine) was to "give students exercises they are really able to handle" (83%), an idea already mentioned with a score of 86% for symptom one. "Do not hear students who call out in class and let those answer who wait for their turn" was suggested by 30 teachers (88%) when they encounter difficulties with students who "call out in class" (symptom 17). The highest recommended ideas for symptoms 18 through 21 reached percentages between 74 ("integrate five minute exercise times in each lesson" for symptom 18) and 55 ("motivational whole body exercises" for symptom 19). The second highest score throughout the 25 ADHD symptoms was yielded in the category "blurts out answers" (symptom 22). 93% of the teachers (28) agreed that "ignoring students that blurt out answers" is the most effective way to diminish this behavior. Likewise, 63% among them agreed that "talking to the students to make them think about their actions" and "set up rules for talking with others" is a good way to reduce this behavior. In the last category (symptom 23) that showed an equal high percentage as seen in symptom 22 (93%), responding teachers (27 out of 37) recommended "talking to student" who are "always on the go and appear driven". Other ideas to help students with this behavior are "using body language" (56%), "calling out student's name" (52%), and "explaining students what they are going to do by stressing motivational activities" (44%). Ideas for symptoms 24 and 25 reached a mean of 33 with the highest scores being 59 and the lowest score being nine. The idea "motivate the student whenever possible" for symptom 23 reached the highest score in these two categories.

Overall, teachers participating in this study showed a good understanding of how to help students with attention deficit most effectively. Talking to the student who has problems was analyzed as being one of the main suggestions teachers reported in this study. Furthermore, teachers stressed the importance of viewing each student with his or her learning style as unique by recommending individual instruction and assigning students to instructional activities that they are really able to handle. Teachers also agreed that students should think about their actions and learn ways to cope with their behavior to participate in social activities. Enfin, teachers agreed that whole body exercises, and positive reinforcement, motivational games and exercises have helped all their students to concentrate and continue learning in a more suitable environment.

Post Hoc Analysis

Additional information was gained from the data. Since the findings were very interesting the researcher decided to summarize them as a post hoc analysis in this section.

The analysis of variance statistical procedure was used to compare each individual ADHD behavior mean with the reading scores. This was done to determine whether all 25 ADHD behaviors individually indicated a significant difference when compared to the reading levels. Results revealed a significant difference between reading scores and the means of 23 behaviors (see Table 9 on page 69 for means and standard deviations of the 25 behaviors). The two exceptions were symptom 20 ("interrupts or intrudes") with p=.0615 and symptom 22 ("blurts out answers") where no significant differences could be established (p=.0939). The remaining 23 behaviors showed p<.05. More specific most of the time the p value was equal to .0001. Exceptions were symptom 15 (p=.0009), 17 (p=.0012), 21 (p=.0345), 23 (p=.0049), and 25 (p=.0142).

Another step to analyze the data was to investigate whether individual behavior means differed among the four reading levels. Using the Tukey honestly significant differences method (HSD), the researcher discovered that nine behaviors indicated significant different behavior means across all reading groups.

Table 9: Analysis of Variance for the Individual Behaviors and Reading

Behavior	Mean	Std Dev	F value	p value
B 1	1.9	0.93	130.6	.0001*
B 2	1.7	0.87	35.4	.0001*
B 3	1.7	0.87	59.92	.0001*
B 4	1.6	0.75	29.81	.0001*
B 5	1.5	0.95	46.16	.0001*
B 6	1.9	0.91	39.77	.0001*
B 7	1.7	0.91	62.01	.0001*
B 8	1.8	0.94	83.77	.0001*
B 9	1.6	0.76	23.2	.0001*
B10	1.8	0.98	46.97	.0001*
B11	1.6	0.80	55.00	.0001*
B12	2.0	0.88	70.48	.0001*
B13	1.9	0.95	10.84	.0001*
B14	1.6	0.80	10.66	.0001*
B15	1.9	0.90	5.54	.0009*
B16	1.6	0.79	27.08	.0001*
B17	1.6	0.86	5.34	.0012*
B18	1.4	0.76	10.21	.0001*
B19	1.4	0.75	6.87	.0001*
B20	1.5	0.78	2.46	.0615
B21	1.5	0.82	2.89	.0345*
B22	1.5	0.82	2.14	.0939
B23	1.4	0.67	4.33	.0049*
B24	1.6	0.85	62.54	.0001*
B25	1.4	0.76	3.55	.0142*

Note. *p= significant difference.

These were behaviors one, three, five, seven, eight, nine, ten, eleven, and twenty-four, at a significance level of p<.05. Again behaviors twenty and twenty-two were the only ones that did not show any significant differences among the six possible pairs of reading groups.

The remaining twelve behaviors indicated several significant differences among at least two behavior means. Behaviors 15, 21, and 23 showed a significant difference between the mean in reading level three and one; behavior 25 showed it between four and one. Several behaviors showed significant differences of the behavior mean between five of the six reading level comparisons; such as number two, four, six , twelve, sixteen, and eighteen (behavior mean difference is not significant among reading level four and three). See Table 10 on page 71 for additional information.

To reveal additional information on the gender issue girls and boys were grouped in their reading level and a HSD was conducted to explore the differences among gender within each reading group. In this test, any mean difference that exceeded 2.023 was statistical significant, at least at the .05 level. One-hundred-and-thirty-two boys and 170 girls were reported in the first reading level. Just looking at those numbers one can assume that more boys had difficulties in reading than girls. Comparing the boys' and the girls' first reading level means, a difference of 7.44 occurred. (See Table 11 on page 72 for means, standard deviations, and total number of girls and boys in each level.)

Table 10: Level Comparison by Individual Behavior Means

Reading Levels and Number of Students

ADHD Behavior	1 302	2 256	3 138	4 54
B1	1.2^{a} (.55)	1.7^{b} (.74)	2.3^{c} (.88)	3.0^{d} (.98)
B2	1.4^{a} (.66)	1.7^{b} (.82)	2.1^{c} (1.02)	2.3^{c} (.92)
B3	1.2^{a} (.53)	1.6^{b} (.78)	2.0^{c} (.96)	2.4^{d} (.98)
B4	1.2^{a} (.54)	1.5^{b} (.76)	1.8^{c} (.89)	1.9^{c} (.74)
B5	1.5^{a} (.76)	1.9^{b} (.87)	2.3^{c} (1.01)	2.8^{d} (1.06)
B6	1.4^{a} (.68)	1.8^{b} (.87)	2.1^{c} (1.00)	2.5^{d} (1.10)
B7	1.3^{a} (.59)	1.7^{b} (.89)	2.2^{c} (.98)	2.6^{d} (1.09)
B8	1.4^{a} (.66)	1.8^{b} (.84)	2.4^{c} (.97)	2.8^{d} (1.04)
B9	1.4^{a} (.60)	1.6^{b} (.71)	1.8^{b} (.88)	2.1^{c} (.97)
B10	1.5^{a} (.93)	1.7^{b} (.83)	2.3^{c} (.93)	2.8^{d} (1.01)
B11	1.3^{a} (.52)	1.6^{b} (.76)	1.9^{c} (.92)	2.4^{d} (.94)
B12	1.5^{a} (.72)	2.0^{b} (.76)	2.5^{c} (.86)	2.8^{c} (.91)
B13	1.7^{a} (.91)	1.9^{a} (.91)	2.2^{b} (.96)	2.3^{b} (1.04)
B14	1.4^{a} (.69)	1.6^{ab} (.80)	1.7^{bc} (.90)	1.9^{c} (.90)
B15	1.8^{a} (.87)	1.9^{ab} (.84)	2.2^{b} (.96)	2.1^{ab} (1.02)
B16	1.3^{a} (.59)	1.6^{b} (.77)	1.9^{c} (.89)	2.1^{c} (1.00)
B17	1.5^{a} (.82)	1.6^{ab} (.82)	1.8^{b} (.94)	1.8^{b} (.93)
B18	1.3^{a} (.63)	1.4^{a} (.74)	1.6^{b} (.89)	1.7^{b} (.98)
B19	1.3^{a} (.65)	1.4^{ab} (.70)	1.6^{b} (.90)	1.7^{b} (.94)
B20	1.4^{a} (.71)	1.5^{a} (.74)	1.6^{a} (.89)	1.6^{a} (.94)
B21	1.4^{a} (.76)	1.5^{ab} (.79)	1.7^{b} (.92)	1.7^{ab} (.96)
B22	1.5^{a} (.76)	1.6^{a} (.81)	1.7^{a} (.89)	1.6^{a} (.92)
B23	1.3^{a} (.61)	1.4^{ab} (.63)	1.5^{b} (.77)	1.5^{ab} (.82)
B24	1.3^{a} (.56)	1.6^{b} (.75)	2.0^{c} (.96)	2.6^{d} (1.09)
B25	1.4^{a} (.71)	1.4^{ab} (.73)	1.5^{ab} (.88)	1.7^{b} (.82)

Note. Column one lists the 25 behaviors. Columns two through five indicate the means of each reading level for each of the 25 behaviors. The standard deviation is put in parenthesis following the means. Means in the same row that do not share subscripts differ at $p<.05$ in the Tukey honestly significant difference comparison.

Table 11: Comparison of ADHD Behavior Means and Standard Deviations for the Reading Levels by Gender

	ADHD Behavior	**Means and SD in ( )**
Reading Levels	**Male**	**Female**
	N=132	N=170
1	38.94^a (13.34)	31.5^b (8.89)
	N=129	N=127
2	43.92^a (13.58)	38.36^b (12.99)
	N=97	N=41
3	51.87^a (17.36)	40.95^b (11.35)
	N=39	N=15
4	59.23^a (15.09)	41.6^b (10.13)

Note. Standard deviations can be found in parenthesis. Means in the same row that do not share subscripts differ at $p<.05$ in the Tukey honestly significant difference comparison.

With the minimum significant difference set at 2.023 results revealed a significant difference in gender when comparing the ADHD scores at the first reading level ($p<.05$). Significant differences were also found in the remaining three reading levels whereas the difference at the second reading level was

5.56; at the third reading level was 10.92; and at the fourth reading level was 17.63. This indicated, that the smallest difference appeared at the second reading level. The difference at the first level did not seem very big, when compared to the differences at the third and fourth level. It seemed as if girls and boys showed similar ADHD behaviors when they were diagnosed at the first or second reading level. Beyond that (level three and four) the differences between girls and boys rapidly grew (at least among the students participating in this study). At the fourth reading level there even was a difference of 17.63. All in all, more boys appeared to have difficulties in reading and also exhibited more ADHD behaviors than their female peers.

This could also be observed when comparing the number of boys and girls at each reading level (See Table 10 on page 71). At the first level females dominated with a plus of 38. At the second level boys and girls evened out (just two more boys). But at the third and fourth reading level, the proportions were two to one. (See also Figure 4 on page 74 and Figure 5 on page 74 for percentages of girls and boys in each reading level.)

As a further analysis, the researcher attempted to determine the relationship between the seven most frequently occurring behaviors and the reading scores. Specifically, the researcher wanted to find whether the seven behaviors could be used as predictors to identify ADHD students at risk because of reading.

Figure 4: Percent of Males in Each Reading Level

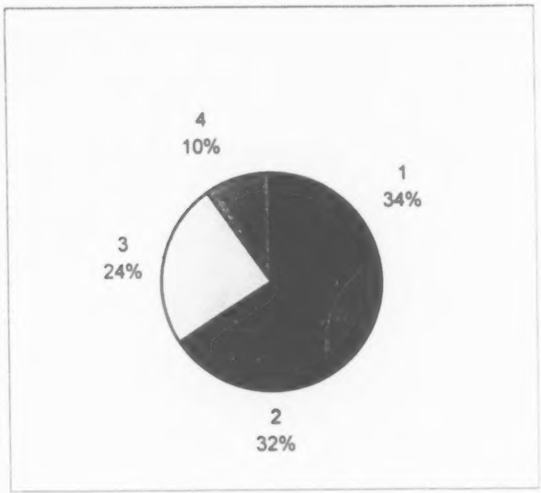
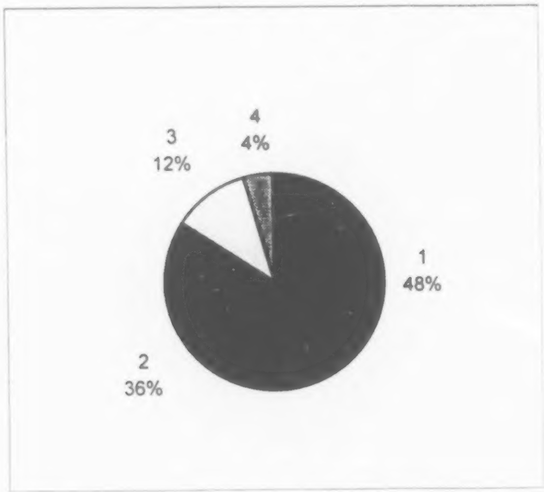


Figure 5: Percent of Females in Each Reading Level



Pearson correlation analysis was used to measure the degree and direction of linear relation between the profile mean (13.02) and the reading level mean (1.93). The coefficient (symbolized r) could range between +1.00 and -1.00. A perfect positive relationship would be reflected by an r of +1.00; a perfect negative relationship by an r of -1.00; and a lack of any relationship by an r of zero. When correlating the reading mean (1.93) with the profile mean (13.02) a correlation of +.461 was found (see Table 12 on page 75).

Table 12: Pearson Correlation of Profile and ADHD and Reading Level Means by Gender

	Profile Means		
	All	Male	Female
ADHD means	.938*	.933*	.926*
Reading level means	.461*	.468*	.352*

Note. Correlation coefficient (r) of profile and ADHD/Read by gender. * indicated significant correlation (p=.0001).

This correlation coefficient indicated a significant positive linear relationship with an accuracy of 21%. Compared to the accuracy predicting the ADHD score from the profile score, 21% seemed rather low. However, the accuracy was still within the significance level. This indicated that these seven behaviors could be used as predictors to identify students with reading problems with an accuracy of 21%. Pearson correlation analysis was used to measure the degree and direction of linear relation between the profile mean (13.02) and the reading level mean (1.93). The coefficient (symbolized r) could range between +1.00 and -1.00. A perfect positive relationship would be reflected by an r of +1.00; a perfect negative relationship by an r of -1.00; and a lack of any relationship by an r of zero. When correlating the reading mean (1.93) with the profile mean (13.02) a correlation of +.461 was found (see Table 12 on page 75).

Table 12 also indicated profile correlation with reading score and ADHD score when students were in their gender groups.

The researcher also wanted to find whether significant differences in gender could be established when only comparing the seven most frequently observed behaviors. Specifically the researcher wanted to investigate whether boys showed significantly more profile (the seven behaviors) behaviors than their female peers. To respond to this question a Tukey honestly significant differences method for the variable profile was used to explore the differences among gender. Any mean difference that exceeded 2.023 was statistically significant, at the .05 level. The male mean profile mean (14.58) was compared to the female profile mean (11.26). Results exposed a significant difference (3.32) in gender when comparing their profile scores ($p<.05$). Again, the male mean score was higher than the female score. See Table 13 on page 77.

The profile means in each reading level were approximately a third from the total ADHD means in each level (see Table 3 on page 54 Table 14 on page 77 for means). This indicated, that relationships between different reading level means were also consistent within the profile means. Thus, this analysis was an additional indication of the accuracy of those seven behaviors when representing the entire ADHD behaviors.

Table 13: Gender Comparison by Profile Mean

Gender	N	Mean Profile
Male	397	14.58^*
Female	353	11.26^*

Note. Means that do not share subscripts differ at $p<.05$ in the Tukey honestly significant difference comparison.

Table 14: Comparison of Reading Levels by Profile Means

Reading Level	N	Profile Mean
4	54	17.93^a
3	138	15.91^b
2	256	13.04^c
1	302	10.80^d

Note. Means that do not share subscripts differ at $p<.05$ in the Tukey honestly significant difference comparison.

Finally, the Tukey honestly significant differences method for the variable profile was used to explore the differences among gender in each reading group. Any mean difference that exceeded 2.023 was statistically significant, at the .05 level. See Table 15 on page 79 for the results. More specific there were four possible mean differences in this investigation. At the first reading level. a significant difference of 2.29 was discovered. No significant difference could be established at the second reading level. The difference between the male mean (13.88) and the female mean (12.20) was 1.68 which was .55 below being significant. This implied, that girls and boys separated in their reading groups displayed no significant difference at the second reading level when using the profile means for comparison.

A significant difference between male and female means at both remaining reading levels (three and four) could be found. The highest difference was found at the fourth reading level, where boys' mean differed from the girls' mean by 6.09.

Overall, one can assume that girls and boys seemed very balanced at the second reading level. At the first reading level however, boys' mean was slightly higher even when only taking the profile scores under consideration. At the third and fourth reading level high differences were found. This verified, that boys at the third and fourth reading level demonstrated more severe profile behavior than their female reading level peers.

Table 15: Gender Comparison within Reading Levels

	Profile Means	
	Male	**Female**
Reading	N=132	N=170
Level 1	12.09^a (4.37)	9.8^b (3.25)
Reading	N=129	N=127
Level 2	13.88^a (4.33)	12.20^a (4.29)
Reading	N=97	N=41
Level 3	16.88^a (5.16)	13.61^b (4.07)
Reading	N=39	N=15
Level 4	19.62^a (4.77)	13.53^b (3.07)

Note. Profile means and standard deviations (in parenthesis). Means in the same row that do not share subscripts differ at $p<.05$ in the Tukey honestly significant difference comparison.

CHAPTER IV. SUMMARY, CONCLUSION, IMPLICATIONS AND FURTHER RESEARCH

In this final chapter, a summary of the literature review, procedures and results, conclusions, and implications for elementary teachers, and recommendations for further research are presented.

Summary

Attention has an impact on the skills a child acquires (Ekwall, Shanker, 1983; Ekwall & Shanker, 1989; Goldstein, 1990; Levine, 1993a, Levine, 1993b; Levine, 1993c; Richek et al., 1989; Samuels, 1994; Taylor, 1990; Weaver, 1994a). Levine (1992) conceptualized attention as having five underlying components: 1. planfulness; 2. selectivity; 3. inhibition; 4. continuity; and 5. monitoring. Each of these five components represent a mechanism for the control of learning and the mediation of behavioral and social performances. A child that suffers attention deficit may run into various problems caused by his or her attention deficit such as not being able to plan one's actions or not being able to concentrate (The Health and Living Channel, 1995). Attention deficit is known as a key symptom in the Attention Deficit Hyperactivity Disorder (ADHD as stated in the Diagnostic and Statistical Manual of Mental Disorder - DSM-IV, p. 78), a neurological disorder (The Healthy Living Channel, 1995). "Attention deficit disorder, [. . .] is an umbrella term used to encompass various conditions that have symptoms of ADHD"(The Healthy Living Channel, 1995, p. 1).

Since inattention and hyperactivity do not always occur in the same intensity the DSM-IV distinguishes between three different subtypes: Attention Deficit/Hyperactive Disorder, Combined Type; Attention Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive Type; and Attention Deficit/Hyperactivity Disorder, Predominantly Inattentive Type (DSM-IV, p. 78).

Children's attention problems have various names, but basically it is important for the educator to be able to identify the needy. The aim is not only to label those students (Ekwall, Shanker, 1989), but also to help those students by knowing exactly the problems they encounter (Weaver, 1994a).

Proponents of ADHD argue that symptoms begin very early in life and are exacerbated when the child enters school and is confronted by classroom rules, teacher demands, and increased parental expectations (Meents, 1989). As a result of this, children with ADHD may experience school related difficulties in the areas of academic performance and achievement such as reading (Stoner, 1994; Weaver, 1994b). LaBerge-Samuels model of reading stresses the importance of attention in the reading process (Samuels, 1994). Studies have shown that in the past decade, there has been an increase in the diagnosis of attention deficit for children who are experiencing difficulty with reading (Gillis, 1994).

The general purpose of this study was to determine the severity of ADHD behaviors (with and without relation to reading abilities) in Austrian elementary classrooms and specific aids suggested by teachers. Thirty-seven teachers and 750 students (grades K-4) participated in the study. Since presently, the only way to diagnose a child as having ADHD is through observation of his/her behavior in school, at home and how he/she performs on certain tests (Owens & Owens, 1995) the results of this research were gathered through teacher observation checklists on the surveys. Once the mailed surveys were received, statistical analyses of the severity of the 25 ADHD behaviors, and content analysis of the teachers' aids were conducted. Specifically, the study addressed the following questions:

1. Did students in these observed classrooms who exhibited ADHD symptoms show more difficulties in reading than their non-ADHD peers?
2. Was there a difference among the observed Austrian girls and boys in relation to the findings of ADHD? Were more boys or girls observed as having severe ADHD symptoms?
3. Which were the most observed symptoms (as being severe: indicated with a three or four in the curriculum map) in the classrooms?
4. What did the teachers report most frequently as aids to help students with specific ADHD related symptoms?

Conclusion

The purpose of this study was to examine the relationship between ADHD and reading in Austrian elementary classrooms. The study addressed the following questions:

1. Did students in these observed classrooms who exhibited ADHD symptoms show more difficulties in reading than their non-ADHD peers?

As previously stated, the ANOVA and post hoc test revealed that students exhibiting ADHD symptoms showed more difficulties in reading than their non ADHD-peers. Results indicated a significant difference (p=.0001) among the students in the four different reading levels when comparing their ADHD means and their reading means. Students in the first reading level group showed less ADHD related behaviors than students in any of the three remaining reading groups. Thus it can be assumed that less ADHD behavior called for better reading scores.

2. Was there a difference among the observed Austrian girls and boys in relation to the findings of ADHD? Were more boys or girls observed as having severe ADHD symptoms?

Based upon the results on the ANOVA there was a significant difference at the p<.05 (F= 98.25) level between the observed girls and boys. The results of the conducted Tukey honestly significant difference method showed the male mean as being 45.7 and the female mean as being 35.5. When comparing their ADHD means a difference of 10.21 could be established. Information gained from the frequency count strengthened these results. Therefore for those 750 students, it can be concluded that boys were indicated as experiencing more ADHD symptoms than their female peers. In general, girls appeared to be more controlled than boys.

3. Which were the most observed symptoms (as being severe: indicated with a three or four in the curriculum map) in the classrooms?

To answer question three the most severe ADHD behaviors were identified. Any behavior that was reported as severe, with a score of three or four on the curriculum map, and was found among 20% or more of the students was identified as one of the most severe behaviors. The result was a list of seven behaviors. The highest percentages among those seven were found at behavior thirteen (29%), twelve (25.7%), ten (25.2%), and five (25%). The remaining three behaviors revealed between 24.2% (behavior fifteen) and 20.9% (behavior six). Among those seven behaviors, means clustered around 1.86 with the highest mean at 1.95 (behavior twelve) and the lowest mean at 1.74 (behavior six). On average, students scored a "two" in any of those seven behaviors. As previously stated, these seven behaviors could be used as an at-risk profile. Pearson correlation analysis was used to correlate the profile mean (13.02) with the total ADHD mean (40.9). A significant correlation could be found (p=.0001). Thus, the correlation provided 88% accuracy that those seven behaviors were accurate representatives for the entire list of 25 behaviors.

4. What did the teachers report most frequently as aids to help students with specific ADHD related symptoms?

The following summary of recommendations from Austrian teachers that participated in the study were suggested when considering that research studies consistently point to three to five percent of the nation's children who have ADHD (Bain, 1991; DSM-IV, 1994; Ekwall & Shanker, 1989; Hümer & Hauser, 1992; Hynd et al., 1991; Kannemann, 1994; Levine, 1993b; Stoner, 1994; Taylor, 1990; Weaver, 1994a; Weaver, 1994b). The findings of the content analysis were consistent with suggestions mentioned in the reviewed literature. Teachers reported a wide range of activities, strategies and ideas they use with their students. Among them were several that yielded 100% such as "talking to the student", "talking to the entire class and discussing the problems", "talking to the parents and making them part of their child's educational career", and "helping as a teacher whenever help is needed". On the whole, participating educators stressed the importance of giving adequate attention to individuals with attention deficit in order to help establish a positive learning environment for the individual and his or her peers.

For the most part, Austrian educators stressed the importance of giving adequate attention to individuals with attention deficit in order to help and establish a positive learning environment for the individual and his or her peers. As educators, responding teachers stressed the importance of making directions as easy to follow as possible. Moreover teachers agreed that students should play an active role in their educational career together with their parents and teachers to reach the ultimate goal: to be educated. Ultimately, teachers should help students to learn to self-monitor their actions and give students the chance to study in small learning groups or even on a one-to-one basis with the teacher or a peer.

Since the symptoms of a child with attention deficit impinge strongly on success in subjects like math, reading, and written expression (Bain, 1991; Ekwall, Shanker, 1983; Levine, 1993b; Taylor, 1990) these ideas recommended by the 37 participating teachers should be taken seriously.

The researcher gained a lot of additional information from the data and its analysis that were not directly related to the four research questions. However the researcher found it very important to include the information for in depth analysis of the data. As a result of this, a summary of additional findings could be found in Chapter 4 under the section post hoc analysis. Among those additional analyses were correlating each of the behaviors with the reading scores, and separating reading groups by gender and comparing them.

Implications

Given the results found in this study, the need for teacher training in the field of ADHD became apparent. Teacher training should be in the area of basic information on ADHD, and how educators can help students exhibiting those behaviors. In the graduate class 'special education', a required course for preservice teachers in Austria, more emphasis should be put to pass on information on disorders that are apparently new in the filed of education. One of the disorders to discuss should be ADHD. The class should provide preservice teachers with the basic understanding and the nature of the disorder and its relationship to schooling in order to avoid mistakenly presided understanding in this area. This does not imply that other topics, that are part of the curriculum for that class, such as how to cope with students' fears should be reduced or eliminated. However, if elementary teachers of tomorrow are going to be able to help students with their attentional deficits, teachers will need to gain additional information and insight on such a new disorder as ADHD.

While trying to change the educational and social system to be more accepting of individual differences, everyone needs to recognize that this will by no means solve all the problems caused by ADHD behaviors. It means not just treating or attempting to change the behavior of the individual, but changing the expectations and demands and the ways of interacting with the child.

ADHD does not merely reside within the individual. Rather, it arises as the individual transacts with the external environment. As a result of this, assessing and helping children with attentional problems becomes a two folded attempt: It involves the treatment of the individual, and the treatment of the environment. Cognitive techniques for self-control and behavioral modification techniques are the most common treatments for the individual besides medication. The first two treatments can be also used with children who exhibit attentional difficulties but are not identified with ADHD, the disorder, itself. The researcher believes, that the focus on helping students should not diminish whenever a student is not diagnosed with the disorder. Rather help is needed for all students who exhibit artificial concentration and attentional difficulties in any form. This is especially important since "[. . .] it is not always easy to distinguish ADHD from other kinds of disorders, disabilities, or physical or emotional problems" (Weaver, 1994c, p. 217). At this point the researcher wanted to stress the need for further assessment tools. The reviewed literature listed several behavioral checklist that could be used by educators and parents. Nevertheless additional checklists for teachers should be developed to gain understanding of each individual student in the class. Teachers who lack sufficient knowledge about ADHD might start to label each student that causes problems with this disorder. Therefore tools that can be used by teachers require teacher training in that field in order to be used effectively and properly.

Cognitive techniques should be part of any lesson to aid all students in the class. In order to make them part of the lessons, teacher training needs to be established in these areas. Behavioral management skills courses or inservices in these areas should be part of further teacher education training. Thus, Barkley (1990) suggested that these self-control techniques were most useful when taught to parents and teachers, who can remind children to rehearse the procedures when situations requiring impulsive control seem about to arise.

As previously stated, behavioral modification techniques are necessary to aid today's children. Many of the surveyed teachers agreed upon that statement by suggesting external controls via behavioral modification in order to help the child develop internal controls. Teacher reported to be successful when rewards and punishment were consistent, immediate, frequent, highly motivating, and modified often in order to maintain motivation.

Definitions of the ADHD syndrome emphasize the fact that the individual is not solely responsible for ADHD behavior. Thus, ADHD behaviors can be alleviated by changing the external environment as well. The traditional classroom requires of the ADHD student everything that he or she is not good at: sitting still and not talking, concentrating on skills work, and not acting or speaking impulsively. Therefore the researcher believes educators should be made aware of the difficulties students may encounter by 'just' sitting still. Their entire concentration may be only focused to sit still.

Therefore one goal should be to adjust the lesson plans to meet the needs and interests of students. Teachers should be sensitive to the interests, abilities, and needs of their students. Teachers should be alert for ways in which they can alleviate students' difficulties and work around their weaknesses. Projects should be organized to create learning experiences that are meaningful and to create varied lessons. As students work collaboratively, they can develop self-control (very important for any student not only for ADHD children), and social skills.

These are several ways how all teachers knowledgeable about ADHD may help any of their students who have difficulties with impulsivity, hyperactivity, and attention. These ideas and suggestions can aid teachers in any classroom no matter if there are many or no diagnosed ADHD'ers among the rest of the students.

Enfin, it is very important to make educator aware of the ADHD disorder, behaviors resulting in it, and how they might be able to aid the students' schooling in collaboration with the parents. Therefore the findings of this survey need to be brought out by conducting inservices for educators currently teaching elementary grades. The opportunity to talk about problems teachers encounter in their classrooms and experiencing that their colleges struggle with similar problems, and professional training will in a way aid the education of any student.

Recommendations for Further Research

This study examined the severity of ADHD behaviors among 750 Austrian elementary students and specific aids suggested by their 37 teachers. Results indicated that symptoms of ADHD were dependent on gender. Moreover, reading scores dropped the more ADHD symptoms the student showed. The results also allowed the researcher to come up with a profile of the seven most observed ADHD behaviors among the 750 students. Hence these seven behaviors were identified as being adequate representatives for the entire set of 25 ADHD behaviors.

The conducted content analysis showed that the participating teachers had a good understanding of how to help their "trouble-makers". Nevertheless teachers should be made more aware of ADHD symptoms and be given more aid and training. To provide teachers with strategies more research needs to be conducted to help focus on the most severe problems.

The amount of classrooms participating in the study did not allow the researcher to generalize her findings to the entire population of Austrian elementary students. Additional studies need to follow to get a clear picture of the situation of ADHD behavior in Austrian elementary classrooms. Given these results, the following recommendations for further research are offered:

1. Conducting studies using the same methodology but increasing the sample size and eliminating convenient sampling. To increase reliability of results a representative sample is suggested. This would allow to generalize results to the entire population of Austrian elementary students.

2. Further studies should be conducted among Austrian elementary students to see whether a correlation can be found among the severity of ADHD symptoms and individual academic skills such as mathematics or writing.

3. Establishing a profile of at risk ADHD symptoms (out of the 25 symptoms identified by French & Polzer-Landretti, 1995). Comparing the results with the results of this study by identifying the top seven severe ADHD behaviors in Austrian elementary classrooms.

4. Using the at risk profile to look for correlation between other academic skills such as writing.

5. Conducting a cross-cultural study involving elementary students from the United States and Austria.

All these suggestions for further research would create more awareness of problems many teachers encounter in their classrooms. Moreover inservices preparing elementary teachers to understand and to help their students with their problems could be positive results of the conducted studies.

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Appendix A

DSM-IV Criteria for ADHD and Subgroups

Diagnostic Criteria for Attention-Deficit/Hyperactivity Disorder

A. Either (1) or (2):

(1) six (or more) of the following symptoms of inattention have persisted for at least 6 months to a degree that is maladaptive ad inconsistent with developmental level:

Inattention

(a) often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities

(b) often has difficulty sustaining attention in tasks or play activities

(c) often does not seem to listen when spoken to directly

(d) often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)

(e) often has difficulty organizing tasks and activities

(f) often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)

(g) often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools)

(h) is often easily distracted by extraneous stimuli

(i) is often forgetful in daily activities

(2) six (or more) of the following symptoms of hyperactivity-impulsivity have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:

Hyperactivity

(a) often fidgets with hands or feet or squirms in seat

(b) often leaves seat in classroom or in other situations in which remaining seated is expected

(c) often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings or restlessness)

(d) often has difficulty playing or engaging in leisure activities quietly

(e) is often "on the go" or often acts as if "driven by a motor"

(f) often talks excessively

Impulsivity

(g) often blurts out answers before questions have been completed

(h) often has difficulty awaiting turn

(j) often interrupts or intrudes on others (e.g., butts into conversations or games)

B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 years.

C. Some impairment from the symptoms is present in two or more settings (e.g., at school [or work] and at home).

D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.

E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder and are not better accounted for by another mental disorder (e.g., Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).

Code based on type:

314.01 Attention-Deficit/Hyperactivity Disorder, Combined Type: if both Criteria A1 and A2 are met for the past 6 months

314.00 Attention-Deficit/Hyperactivity Disorder, Predominantly Inattentive Type: if Criterion A1 is met but Criterion A2 is not met for the past 6 months

314.01 Attention-Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive Type: if Criterion A2 is met but Criterion A1 is not met for the past 6 months

Coding note: For individuals (especially adolescents and adults) who currently have symptoms that no longer meet full criteria, "In Partial Remission" should be specified.

Appendix B

Survey Package in German and its English Translation

Bowling Green, 24. Oktober 1995

Liebe/r Lehrer/in!

Herzlichen Dank, daβ Sie sich bereit erklärt haben, an dieser Studie teilzunehmen. Diese Studie ist ein Teil meiner Diplomarbeit, um im Mai an der Bowling Green State University (Ohio/USA) den Titel “Specialist in Education” zu erlangen.

Seit dem letzten Jahr habe ich während meines Studiums im Lesezentrum, in dem Kindern mit Lese- und Schreibschwierigkeiten geholfen wird, gearbeitet. Unter diesen Schülern befinden sich immer wieder einige, die neben diesen Schwierigkeiten auch Aufmerksamkeitsstörungen aufweisen. Um diesen Kindern mit ihren Schwierigkeiten gezielter zu helfen, habe ich mich seit dem letzen Jahr mit dieser Materie ausführlich beschäftigt. Ein sehr wichtiger Gesichtspunkt meiner Arbeit ist der Zusammenhang zwischen Leseschwierigkeiten und Aufmerksamkeitsstörungen.

Mit dieser Studie möchte ich nachweisen, ob Lehrer heutzutage mit dem ‘Psychoorganischen Syndrom’ (POS) -- in den USA unter dem Namen “attention deficit hyperactivity disorder” (ADHD) bekannt -- und den Handlungen, die es hervorruft, vertraut sind. Auβerdem will ich feststellen, in welcher Intensität Handlungen, die mit dem Syndrom POS in Verbindung gebracht werden in österreichischen Klassenräumen beobachtet werden können.

Vielen Dank im voraus, daß Sie die Zeit und Mühe aufwenden, um die beigelegte Tabelle gewissenhaft auszufüllen. Die erhobenen Daten werden selbstverständlich vertraulich behandelt. Ich ersuche Sie, die Fragebögen möglichst bald, spätestens aber bis 15. Dezember 1995, im beigelegten Kuvert zurückzusenden.
Auftretende Fragen richten Sie bitte an meine Mutter, Frau Heide Ruschko, die unter der Telefonnummer 06246-75368 zu erreichen ist.

Mit freundlichen Grüßen

Alexandra Ruschko

Beilagen: Anweisungen, Datentabellen

Im **ersten Teil** der Studie ersuche ich Sie, das Verhalten Ihrer Schüler während des Unterrichts oder der Pausen zu beschreiben. Dazu verwenden Sie bitte die beiliegende Tabelle.

Vertikal listet die Tabelle verschiedene Verhaltensformen auf. Horizontal befinden sich die Nummern von 1-24 (25-30 auf der Zusatztabelle), die die Schüler in Ihrer Klasse repräsentieren. Ich ersuche Sie, für jeden Ihrer Schüler eine separate Spalte auszufüllen. Als einzige allgemeine Information über den Schüler geben Sie nur das jeweilige Geschlecht (m, w) und die Lesefähigkeit unter Berücksichtigung der Schulstufe an. Bitte benoten Sie die Lesefähigkeit Ihrers Schülers von 1-5 (1=sehr gut, 2= gut, 3=befriedigend, 4=genügend, 5= nicht genügend).

Der Rest der Tabelle listet 25 verschiedene Verhaltensweisen auf, die mit dem Syndrom POS in Verbindung gebracht werden.

Tragen Sie bitte die Intensität, mit der das jeweilige Verhalten des Schülers auftritt, in folgender Weise in die Spalte ein:

Der Schüler zeigt dieses Verhalten

4= ein oder mehrmals pro Stunde

3= ein oder mehrmals pro Tag

2= ein oder mehrmals pro Monat

1= nie oder selten

Sollte Ihre Klasse aus mehr als 24 Schülern bestehen, verwenden Sie bitte die Zusatztabelle (25-30). Nachdem Sie alle Schüler in die Tabelle eingetragen haben, vergewissern Sie sich bitte, daß jede Zelle eine Eintragung enthält, da nur jene Schüler für die Studie verwendet werden können, deren Spalte gänzlich ausgefüllt ist. Vergessen Sie bitte nicht, die Schule und Schulstufe, in der Sie gerade unterrichten, einzutragen.

Im **zweiten Teil** dieser Studie möchte ich herausfinden, wie Sie mit diesen Verhaltensweisen umgehen, wenn diese in Ihrem Unterricht oder in den Pausen auftreten. Dazu ersuche ich Sie, jene der 25 Verhaltensweisen zu berücksichtigen, die bei zumindest einem Schüler ein oder mehrmals pro Tag oder ein oder mehrmals pro Stunde (in der Tabelle mit 3 oder 4 gekennzeichnet) auftreten. Jene Verhaltensweisen, die in der Tabelle mit 1 oder 2 vermerkt wurden, werden nicht mehr berücksichtigt.
Dieser Teil der Studie ist sehr wichtig, da die Strategien und die Ideen, die Sie bei Ihren Schülern anwenden, nützliche Informationen für andere Lehrer enthalten können. In diesem Sinne nehmen Sie bitte zu dieser Frage Stellung: Wie verhalten Sie sich, wenn ein Schüler dieses Verhalten, aufweist? Nehmen Sie bitte zu jedem einzelnen Verhalten, das in einer Zeile der Tabelle zumindest einmal mit 3 oder 4 gekennzeichnet wurde, gesondert Stellung. Die Beantwortung der Frage kann stichwortartig erfolgen. Zum Beispiel: Das Verhalten "ruft Antworten heraus" wurde in der Tabelle zumindest einmal mit 3 oder 4 markiert. Mögliche Vorschläge wären: Ermahnung des Schülers, Gespräch mit den Eltern, Gespräch mit dem Schüler, Diskussion des Problems in der Klasse, etc. Zum Notieren Ihrer Ideen verwenden Sie bitte Seite 7.

Klasse: **Schule:** ______________________

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Schüler																								
Geschlecht																								
Lesefähigkeit																								
Schwierigkeiten dem Unterricht zu folgen																								
Schwierigkeiten Sachen in Ordnung zu halten																								
Schwierigkeiten angefangene Arbeiten zu beenden																								
verliert Sachen z.B. Arbeitsblätter																								
leicht ablenkbar																								
scheint nicht zuzuhören																								
benötigt Beaufsichtigung																								
Konzentrationsschwierigkeiten																								
scheint gelangweilt zu sein																								
kann sich konzentrieren, aber nur für kurze Zeit																								
zeigt passive Lernhaltung																								
macht Schlampigkeitsfehler																								
läuft in den Pausen herum																								
hat Schwierigkeiten leise zu spielen (z.B. in Pausen)																								
schwätzt																								
handelt bevor er/sie denkt																								
ruft heraus ohne aufzuzeigen																								
Schwierigkeiten auf seinem/ihrem Platz zu bleiben																								
benimmt sich wie ein 'Zappelphillipp'																								
unterbricht andere beim Sprechen																								
Schwierigkeiten zu warten bis an der Reihe																								
ruft Antworten heraus																								
in Aufbruchsstimmung																								
benötigt viel Motivation zum Lernen																								
unternimmt Aktionen, die die Mitschüler stören																								

Schüler	25	26	27	28	29	30						
Geschlecht												
Lesefähigkeit												
Schwierigkeiten dem Unterricht zu folgen												
Schwierigkeiten Sachen in Ordnung zu halten												
Schwierigkeiten angefangene Arbeiten zu beenden												
verliert Sachen z.B. Arbeitsblätter												
leicht ablenkbar												
scheint nicht zuzuhören												
benötigt Beaufsichtigung												
Konzentrationsschwierigkeiten												
scheint gelangweilt zu sein												
kann sich konzentrieren, aber nur für kurze Zeit												
zeigt passive Lernhaltung												
macht Schlampigkeitsfehler												
läuft in den Pausen herum												
hat Schwierigkeiten leise zu spielen (z.B. in Pausen)												
schwätzt												
handelt bevor er/sie denkt												
ruft heraus ohne aufzuzeigen												
Schwierigkeiten auf seinem/ihrem Platz zu bleiben												
benimmt sich wie ein 'Zappelphillipp'												
unterbricht andere beim Sprechen												
Schwierigkeiten zu warten bis an der Reihe												
ruft Antworten heraus												
in Aufbruchsstimmung												
benötigt viel Motivation zum Lernen												
unternimmt Aktionen, die die Mitschüler stören												

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Ideen und Vorschläge um den Schülern zu helfen

Bowling Green, October 24, 1995

Dear Teacher,

Thank you for taking your valuable time to participate in this survey research. The results will be kept confidential and are part of the specialist research study I am currently conducting.

At the moment I am working on my specialist degree in reading at the Bowling Green State University (Ohio/USA). This research study is a project for finishing my degree. During the last year I have been working in the Bowling Green State University Reading Center. Clinicians such as myself work with students who have difficulties in reading. Among them I have seen a lot of students who have additional symtoms of attention deficits. To be able to help those students and understand those behaviors I examined among them, I have started to research in this area.

Nearly one year has passed since I started my investigations and attention problems in children with reading difficulties are still among my primary concerns.

The reason for this present study was to find out if POS (known as ADHD in the US) is a term teachers should be aware of. Moreover I wanted to find out if and to what extent behaviors, connected with the POS syndrome occur in Austrian classroom.. I hope you will take this survey seriously and view this research as an important step toward more research concerning the behavior of children in the classroom.

Thanks again for taking your time to make your class part of the survey.

The survey will be collected by hand on December 15th.

If you have any questions, concerning the survey till then, please contact H. Ruschko, since I am still in the United States, Tel: 06246-75368.

Sincerely,

Alexandra Ruschko

Please find enclosed the instructions to participate in the survey (page 2-3) and the roster to be filled out (page 4).

The **first part** of this survey asks you to rank your students according to their behavior.

Please fill out the form in the following way.

First indicate the grade and the school you are teaching in. Take a list of your students and start with the first student to fill out the general information needed. Please indicate the sex of the student; no additional personal data of the student is necessary. The roster also asks you to indicate the student's reading ability by giving grades from 1-5 (1= excellent, 2= very good, 3= good, 4= satisfactory, 5= not satisfactory).

After that 27 different behaviors are listed that are connected with the ADHD syndrome.

While filling out the rest of the roster please refer to the following coding system:

4= one to several times per hour

3= one to several times per day

2= one to several times per month

1= does seldomly or never engage in the behavior

When finished with one student move on to the next one. Once you are done please make sure that all cells contain a number, since only those subjects can be used for the study that contain all required information.

The **second part** of this survey contains of one open ended question. The researcher of this study would like to know how teachers in everyday situations cope with specific behavior of the students. This part of the survey is very important since these strategies and tricks you use for your students may be of help for other teachers. As a result of this please write down which strategies or ideas you have when any of your students shows any of the 27 behaviors one or several times per hour (indicated with a 4 in the roster), or one or several times per day (indicated with a 3 in the roster). Don't hesitate to mention strategies as simple as talking to the student. You can either state your strategies and ideas in a list form or write an essay about how you help and react to those behavior when they appear in your class. When stating our ideas you can be specific of how to help a specific student (especially if you observe this behavior on a specific child all the time) or write general what you would do, when any of your students shows this behavior.

Therefore please indicate how you react and help when those behaviors occur whenever you indicated that any of your students showed any behavior all the time (4), or frequently (3). For instance if student number 3 has a 4 in the cell 'has difficulty finishing a task' which stands for "all the time" write your suggestions.

Grade: **School:**

Students	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Sex																								
Reading ability																								
difficulty following through on instructions																								
difficulty organizing things																								
difficulty finishing task																								
loses things																								
easily distracted																								
does not seem to listen																								
needs a lot of supervision																								
difficulty concentrating/sustaining attention																								
feels 'bored'																								
exhibits superficial concentration																								
is inactive/passive toward learning																								
careless errors																								
excessive running and climbing																								
difficulty playing quietly																								
talks excessively																								
acts before thinking																								
calls out in class																								
difficulty staying seated																								
fidgets and squirms																								
interrupts or intrudes																								
difficulty waiting for turn																								
blurts out answers																								
always on the go - appears driven																								
excessive need for motivational stimuli																								
actions that alienate peers																								

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Students	25	26	27	28	29	30						
Sex												
Reading ability												
difficulty following through on instructions												
difficulty organizing things												
difficulty finishing task												
loses things												
easily distracted												
does not seem to listen												
needs a lot of supervision												
difficulty concentrating/sustaining attention												
feels 'bored'												
exhibits superficial concentration												
is inactive/passive toward learning												
careless errors												
excessive running and climbing												
difficulty playing quietly												
talks excessively												
acts before thinking												
calls out in class												
difficulty staying seated												
fidgets and squirms												
interrupts or intrudes												
difficulty waiting for turn												
blurts out answers												
always on the go - appears driven												
excessive need for motivational stimuli												
actions that alienate peers												

Ideas and suggestions of how you help your students

Appendix C

Tables of ideas and their percentages of being recommended for each of the 25 ADHD behaviors

General suggestions and ideas	% recom.
talk to the student	100%
talk to the entire class and discuss problems	100%
make parents part of the child's educational career; keep them informed; so they are more willing to work together with the teacher	100%
talk to parents about problems at home (divorce)	100%
talk to parents about similar behavior of the student at home: try to find out why student acts like this; work on a plan together with the family to help the student	100%
help whenever help is needed	100%
show student that he/she is important and that the teacher cares about him/her	92%
provide students with enough space, but show them the limits as well	81%
'KIM'-games: games to strengthen perceptional awareness	81%
varied lessons	80%
activities and games to promote concentration	78%
motor activity exercises and games 'Fein-und Grobmotorik'	77%
observe student frequently and make notes of behavior	70%
whole body exercises with open window	67%
whole body exercises before and during study periods to strengthen the ability to concentrate, to relax, and to activate the entire body	32%

Note: General ideas and suggestions to help students who show ADHD behaviors. Percentage is based on the entire amount of teachers to participate in the study. N=37.

SYMPTOM 1	
difficulty following through instruction	% recom.
give students exercises they can really handle (not too difficult, not too easy)	86%
work with students individually	74%
call student by name	63%
children as teachers	54%
hands-on activities	49%
children help each other	49%
ask student for his/her opinion	43%
integrate students more in the lessons	29%
show students the importance of asking questions; motivate them to ask question and take questions seriously	26%
work on small goals to reach the final goal	23%
to guide students' work by asking them what they are working on	14%
change seating plan	11%
work in small groups	9%
whisper instruction in student's ear again	3%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=35.

SYMPTOM 2	% recom.
difficulty organizing things	
show and talk to students how to keep things tidy	89%
simple organizing system: each child has his/her own drawer, the satchel contains only the homework for the next day	63%
two students per week are responsible that the room is cleaned (games are on their places,..); shows students that everyone needs to help otherwise the work is too much for the two students	57%
check the items in the student's satchel	57%
help student to pack his/her satchel effectively	54%
write down the homework for the next day in an extra exercise book	43%
exercises and games that help students keep their things tidy	40%
make sure that the teacher's desk is organized	34%
game: 'who is the first to find...'	29%
write down the homework together	23%
student cleans desk and checkroom place at the end of each day	14%
when organizing the entire class sings the song 'we organize... our satchel....' until each student's satchel is organized	3%
positive reinforcement whenever student's desk is organized	3%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=35.

SYMPTOM 3	% recom.
difficulty finishing task	
individualize work for student if too difficult or too simple	94%
finish a work before you start a new one	59%
give student a desk where he/she is not easily distracted	56%
student has to take work home, or stay for the 'Foerderstunde' (one hour per week) where students meet with the classroom teacher to finish up work or get individual help	44%
work on small goals to reach the final goal	29%
plan a week ahead together with the student: allow the student to choose own work but tell him/her that once an exercise is started it has to be finished by the end of the week	15%
supervise the student	12%
allow children to finish up with exercises on Friday (plan half an hour)	9%
in extreme cases teacher should shorten the student's exercise	9%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=34.

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SYMPTOM 4	% recom.
loses things	
use exercise books for each subject instead of too many loose papers	76%
give student the opportunity to be responsible for his/her own work	24%
write down the homework together	9%
check the items in the student's satchel	50%
help student to pack his/her satchel effectively	26%
show and talk to students how to keep things tidy	18%
exercises and games that help students keep their things tidy	53%
make sure that every finished exercise sheet is put in the specific folder	24%
exercise sheets that are lost need to be done again	15%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=29.

SYMPTOM 5	% recom.
easily distracted	
whole body exercises after sitting for a while	89%
integrate activities that promote concentration	81%
talk about the importance of being quiet during the class period: what is important?	47%
use body language to get attention of the student again	42%
call student by name	25%
make up rules with the class	17%
use eye contact to focus his/her attention on the subject matter	14%
give instructions while standing close to the student	11%
give student another desk, another surrounding may help	8%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=36.

SYMPTOM 6	% recom.
does not seem to listen	
set up rules with the students and write them on a poster so students can see the rules all the time	59%
before starting the lesson wait until everyone is paying attention	50%
call student by name	29%
ask and remind students to pay attention during class time	26%
ask student questions while explaining	24%
tell homework to parents	21%
use body language to get attention of the student	18%
ask students to explain the problem in their own words, which promotes understanding	15%
find out if student is tired if so talk to the parents about why	15%
ask student: did you hear that? this is very important, can you explain it again, some children still don't understand it!	12%
student sits in the first row	12%
give student something to do, let him/her help you hold some material	9%
motivate students to ask questions while explaining	9%
play games where listening is a necessity to playing the game ('Stille Post')	9%
use eye contact to focus his/her attention on the subject matter	6%
play games that allow no one to talk: to find solution students have to 'listen' to their peers' body language	6%
as a group tell a story: after the first student is done, the second student continues with the story; students have to listen in order to continue the story	6%
'experience-game': student talks, all talk and no one listens; how do you feel now?	3%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=34.

SYMPTOM 7	% recom.
needs a lot of supervision	
call student by name	46%
students help each other to obey their own rules	43%
supervise students and show them that the more they act thoughtfully the less observation is needed and the more they can be responsible for themselves	34%
showing that working with the class can be fun: today I really enjoyed working with you.. Axel you were really patient today..	20%
talk to student individually: how would you feel if someone would do the same with you..	14%
arrange appointment with parents if student shows continuous aggressive behavior	14%
do a lot of group work; integrate student in a group that can help him/her	14%
observe student in various situations: during class time (different lessons: math, reading,..), break, gymnastic lesson,.., how does he/she behave when a substitute, or another teacher from the school teaches?	11%
ask student to help collecting exercise books	9%
give student the feeling that he/she has time to talk to the teacher and the teacher cares about him/her	9%
give student a desk close to the teacher's one	6%
let students work individually and keep an eye on students that need supervision	3%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=35.

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SYMPTOM 8	% recom.
difficulty concentrating/sustaining attention	
make up rules with the class and write them on a poster so students can see the rules all the time	69%
whole body exercises after sitting for a while	56%
provide students with a variety of different activities during class time	53%
everything on the student's desk that has nothing to do with the subject matter is put away	33%
call student by name	25%
rhythmic exercises	19%
whole body exercises with open windows	14%
talk about the importance of being quiet during the class period: what is important?	11%
integrate meditation units to strengthen concentration	11%
explain segments of the lessons a couple of times	8%
write down a short plan (five things to do) of the lesson on the blackboard so students who were daydreaming can easier reintegrate in the lesson; also many children need to know what is going on in the next hour, prepares them for the lesson; it is easier	6%
after sitting and studying for a while allow students to juggle with two balls	6%
after sitting and studying for a while sing a song	3%
create exercises where students have to use their entire body to solve it; such as let them measure the door,..., not only their desk	3%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=36.

SYMPTOM 9	% recom.
feels 'bored'	
give students exercises they can really handle (not too difficult, not too easy)	83%
don't teach one subject too long, rather return to the subject matter later that day again	69%
provide students with a variety of different activities during class time	59%
make students active participants in the organization of the lessons	45%
give student the opportunity to talk	28%
integrate short motivational games, activities into the lesson	24%
allow student to teach him/herself a new material (for instance through reading find out more about frogs)	10%
talk to parents probably student is tired; find out why! TV? explain parents consequences of the child's watching TV (too tired to study)	10%
talk about imaginative journeys with the students; let them create a journey	3%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=29.

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SYMPTOM 10	% recom.
exhibits superficial concentration	
call student by name	53%
work on small goals to reach the end of a project	47%
encourage the student to try it again	34%
everything on the student's desk that has nothing to do with the subject matter is put away	31%
positive reinforcement of already done work	28%
don't teach one subject too long, rather return to the subject matter later that day again	25%
activate self-control	6%
short study periods: 10 minute alarm: self-affirmation that the student is able to concentrate and work on the project for ten minutes	6%
after sitting and studying for a while allow students to juggle with two balls	6%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=32.

SYMPTOM 11	% recom.
is inactive/passive toward learning	
don't teach one subject too long, rather return to the subject matter later that day again	54%
use motivational games so that students enjoy learning and have fun learning something new	51%
make students active members of the organization of the lesson	40%
observe student and search for reasons why student is passive (tired?)	20%
write down names of students who are active on the board; celebrate them at the end of the day/week	11%
make sure that repetition of learned material is done through games	9%
don't wait for the student to show interest in the lesson, ask him/her a lot	9%
positive reinforcement for active students (star or point system)	6%
talk about imaginative journeys with the students; let them create a journey	3%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=35.

SYMPTOM 12	% recom.
careless errors	
work individually with the student	34%
give student enough time to do it over again (without time stress)	29%
provide students with a quiet learning atmosphere	20%
allow student to read exercise over again to find own mistakes	17%
the final draft is without mistakes, teacher and student review drafts together	14%
student has to write exercise again before doing something else	14%
help with long passages to write	11%
exercises can only be collected if the student has read trough his/her work twice	11%
tell students that there is a mistake but let them find it, give hints by showing the line where the mistake occurs	9%
allow students to exchange notes, to find out if they have the same outcome than their peers	9%
ask student to repeatedly read the exercise on the board and in his/her exercise book to find his/her mistake	6%
positive reinforcement: stamp their work if there is no mistake	6%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=35.

SYMPTOM 13	% recom.
excessive running and climbing	
allow students to shout and run for the first five minutes of every sports lesson	64%
provide students with a variety of games and exercise that include running and climbing during sports	53%
allow students to stretch and do exercises during class time	50%
set up rules with the students and write them on a poster so students can see the rules all the time	47%
during lessons make up rules and agreements with students not to run	42%
plan lessons where students are encouraged to walk around such as to interview others	39%
plan lessons where students don't have to be at their desk all the time; alternative studying places such as under the desk, in the corner can be used instead	39%
plan games during the breaks together	19%
provide students with games that are known as 'silent' ones such as 'memory'	11%
during breaks basically all students run which is good	3%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=36.

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SYMPTOM 14	% recom.
difficulty playing quietly	
talk about the consequences: what if all children play that noisily?	59%
ask to be more quiet	56%
allow students to shout and run for the first five minutes of every sports lesson	44%
provide students with games that are known as 'silent' ones such as 'memory'	41%
integrate noisy games in the sports lesson	15%
talk about imaginative journeys with the students; let them create a journey; so students sit down, think, and calm down	3%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=34.

SYMPTOM 15	% recom.
talks excessively	
positive reinforcement of those students who don't talk all the time	43%
set up rules with the students and write them on a poster so students can see the rules all the time	40%
at the end of each day or in the morning students sit together and talk about special events, share work,.., everyone is encouraged to talk now	29%
talk to student: is this important now?	26%
make student leader of a discussion, now he/she has to listen	23%
play games that allow no one to talk: to find solution students have to 'listen' to their peers' body language	23%
'experience-game': student talks, all talk and no one listens; 'how do you feel now?'	3%
talk about imaginative journeys with the students; let them create a journey	3%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=35.

SYMPTOM 16	% recom.
acts before thinking	
give student enough time to think it over again	53%
tell them: think and try it again	50%
interrupt student in his/her action and ask what he/she is doing; helps student to see wrong behavior	43%
set up rules with the students and write them on a poster so students can see the rules all the time	13%
remind student: remember our rules?	13%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=30.

SYMPTOM 17	% recom.
calls out in class	
don't 'hear' students who call out in class, let those answer who wait for their turn	88%
student has to wait for his/her turn until he/she has calmed down	74%
reminding student: remember our rules?, please wait for your turn	44%
set up rules with the students and write them on a poster so students can see the rules all the time	29%
entire class says 'what a pity' which means we would have liked to try it alone	3%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=34.

SYMPTOM 18	% recom.
difficulty staining seated	
integrate five minute exercise times in each lesson (if necessary)	74%
'Fit mach mit' exercises (motivational whole body exercises: for instance: walk like a duck, a frog,..) during lessons	56%
provide student with activities to get up: 'close the window', 'water the flowers'	30%
change seating plan frequently	19%
whenever student gets up give him/her a duty to do such as 'close the window'	15%
allow student to continue work while standing or lying on the floor (if possible)	11%
after sitting and studying for a while allow students to juggle with two balls	7%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=27.

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SYMPTOM 19	% recom.
fidgets and squirms	
'Fit mach mit' exercises (motivational whole body exercises: for instance: walk like a duck, a frog,..) during lessons	55%
integrate activities that allow students to relax in the daily routine	39%
short intensive study sequences (20 minutes) followed by a five to ten minute break where they draw, or play short games to either relax or review studied material	32%
students who behave get a "*", ten stars can be exchanged for a 'homework-certificate', which allows students to forget their homework once	23%
give student a little ball or stick to hold on; can play with the hands	13%
students get 'the ball' (body in motion but without disturbing the other students) to sit on	10%
talk to parents about seeing a doctor or the school psychologist	10%
allow student to continue work while standing or lying on the floor (if possible)	10%
after sitting and studying for a while allow students to juggle with two balls	6%
students who behave get a "*" on their desk others a "-"	3%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=31.

SYMPTOM 20	% recom.
interrupts or intrudes	
change seating plan	61%
ask them to let the teacher finish talking	54%
set up rules for talking with others and as a group try to obey them	50%
write the rules on a poster so students can see the rules all the time	43%
make student leader of a discussion group where he/she has to make sure every student can finish talking, other wait for their turn and so on	29%
look for reasons of the problem: nutrition?, specific problems in subject areas such as reading?	25%
arrange meeting with psychotherapist, child, and parents	18%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=28.

SYMPTOM 21	% recom.
difficulty waiting for turn	
tell students 'patient students will be called on first', so students try to be patient	58%
positive reinforcement: 'good Peter that you listened so carefully'	48%
set up rules for talking with others and as a group trying to obey them	42%
write the rules on a poster so students can see the rules all the time	32%
stress the importance of each student's argument	32%
talk to students about the importance to let others talk	23%
one student gets the 'small ball', only the student that has the ball is allowed to talk	3%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=31.

SYMPTOM 22	% recom.
blurts out answers	
don't 'hear' student's answer, ignore answer	93%
talk to students that this is not fair; everyone wants to think and find the answer	63%
set up rules for talking with others and as a group trying to obey them	63%
write the rules on a poster so students can see the rules all the time	33%
entire class says 'what a pity' which means we would have liked to try it alone	3%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=30.

SYMPTOM 23	% recom.
always on the go - appears driven	
talk to student	93%
use body language, put hand on student's shoulder	56%
call out student's name	52%
explain students what they are going to do today, stress motivational activities	44%
talk with parents and the school psychologist	11%
after sitting and studying for a while allow students to juggle with two balls	7%
don't let students feel that there are 'only' five minutes until the break	4%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=27.

SYMPTOM 24	% recom.
excessive need for motivational stimuli	
motivate the student whenever possible	59%
hands on teaching	53%
project learning	47%
positive reinforcement for active students (star or point system)	44%
weekly planning of things to do and things the student wants to accomplish	38%
set up individual goals with the student: small goals to reach the ultimate goal	18%
use learning games that show the student's individual learning success	9%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=34.

SYMPTOM 25	% recom.
actions that alienate peers	
peers help each other to remember rules	50%
students try to find solutions together	50%
talk to students and discuss problems 'what if someone would do this with you?'	43%
change seating plan	40%
talk about consequences	30%
student apologizes by peers	23%
give student something 'important' to do; give him/her enough to do	23%
talk with the student outside the class to find out reason for behavior	17%
talk about positive things the student can do	17%
explain why actions are not 'funny' and accepted	10%
student has to stay seated while others are allowed to play	10%

Note: Percent of tables is based upon total number of teachers reporting student with a 3 or 4 indicating the intensity the specific ADHD behavior occurred. N=30.